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# Group control motive as a determinant of ownership structure in business conglomerates<sup>☆</sup> Evidence from Korea's chaebols

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## Abstract

In this paper, we attempt to make two major contributions to the literature that studies the ownership structure of business conglomerates. First, we introduce the concept of *group control motive* and empirically show that this motive greatly shapes the controlling-minority ownership structure. Using a two stage least squares (2SLS) framework, we show that controlling families hold greater direct shareholdings in firms that have greater contribution to group control, and alternatively show that firms in which the controlling families hold greater direct shareholdings are made to have greater contribution to group

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control. Second, we find that the level of disparity between voting and cash flow rights is significantly higher than the levels previously reported in the literature on Korean firms when we include non-public firms and adopt a control concept that is more flexible and closer to reality.

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## 1. Introduction

Recent literature on corporate ownership gives increasing attention to firms in which a shareholder (or a family) exercises significant control while owns only a small fraction of cash flows. Typically, these firms are members of a large business conglomerate characterized either by dual class shares, pyramids, or cross-shareholdings. This ownership structure, termed as the controlling-minority structure by [Bebchuk et al. \(2000\)](#), is now recognized among scholars as a major form of corporate ownership in addition to the other two that previously received more attention: dispersed and concentrated ownership structures. Also, research shows that most of the firms in East Asia and in continental Europe fall into this category ([Claessens et al., 2000](#); [Faccio and Lang, 2002](#)). More importantly, many recent works show that such separation between ownership and control – also known as disparity – has an important implication on firm performance ([La Porta et al., 2002](#); [Claessens et al., 2002](#); [Mitton, 2002](#); [Fan and Wong, 2002](#); [Joh, 2003](#); [Haw et al., 2004](#); [Lins, 2003](#); [Lemmon and Lins, 2003](#); [Baek et al., 2004](#); [Morck et al., 1988](#)).

Surprisingly, however, despite the long list of papers that empirically study the impact of control-ownership disparity on firm performance (hereafter *disparity-to-performance studies*), not many papers attempt to study the determinants of disparity (hereafter *determinants-of-disparity studies*). What makes a controlling family hold company shares directly (e.g. increase cash flow rights) rather than holding them indirectly through member firms (e.g. increase disparity)? Why are some firms located on the top of the corporate pyramid structure and others at the bottom? If control-ownership disparity is important, we believe it is also important to study the determinants of such disparity and provide answers to such questions.

To our knowledge, there is only one study that empirically studies the determinants of disparity. [Chang \(2003\)](#) investigates how inside ownership and family portion of this inside ownership interact with firm performance using a two-stage least squares (2SLS) framework. Using a sample of group-affiliated public firms in Korea during 1986–96, he finds that controlling families tend to increase inside ownership in firms with higher profitability or firm value, but not vice versa. The causality running from profitability to inside ownership, however, is found to be weak. Also, the author did not find the impact of performance on the family portion of inside ownership.

In this paper, we build upon the work of [Chang \(2003\)](#) and attempt to make a number of important contributions to the literature. First, we study the controlling family's group control motive as an important determinant that shapes the controlling-minority ownership structure. *Group control motive* is the desire to structure intra-group ownership in a way that maximizes the controlling shareholder's control over the whole business conglomerate at a given level of direct share investment. More specifically, using a two-stage least squares (2SLS) framework, we show that controlling families hold greater direct shareholdings in firms that have greater

contribution to group control, and alternatively show that firms in which the controlling families hold greater direct shareholdings are made to have greater contribution to group control. To test this, we introduce an algorithm that allows us to measure how much contribution each company makes to group control. We also hypothesize and show that controlling family's *pecuniary motive* – the desire to increase (decrease) shareholding in firms with higher profitability (risk) – is relatively small in magnitude compared to the group control motive.

To test the hypotheses, we study Korean chaebols – the large family-controlled business conglomerates that dominate the Korean economy. A number of features make chaebols a good testing ground for our hypotheses. First, in a typical chaebol, there is a great deal of intra-group shareholdings among the affiliated firms, and such shareholdings create disparity between ownership and control, which is the main variable we study in this paper. Second, in case of chaebols, there exists a natural person, not a legal person, who is the common controlling shareholder of multiple companies. This aspect of chaebols allows us to study the two motives – group control motive and pecuniary motive – that is more relevant to a natural person. Third, many papers have already shown that disparity, our main variable of interest, has a material impact on firm value, profitability, and share return in Korea (Joh, 2003; Baek et al., 2004; Black, Jang, and Kim, 2006).

In this paper, we use of a unique dataset from the *Korea Fair Trade Commission* (KFTC) that contains comprehensive and detailed information on the intra-group shareholdings of 46 large business conglomerates over a six-year period (1997–2002). A number of unique features of this dataset allow us to make our second important contribution to the literature. That is, a more precise measure of cash flow rights, control over voting rights, and disparity between the two. This second contribution is achieved in two ways.

First, the dataset includes ownership information of non-listed firms. Given the difficulty of obtaining ownership data of unlisted firms, previous research solely focused on public firms.

This can be problematic when one is studying the ownership structure of business conglomerates like the Korean chaebols, which often include many non-public firms.<sup>2</sup> It should also be noted that, in Korea, non-listed firms, in which the controlling shareholder possesses a high direct ownership stake, often serve as the *de facto* holding company for the group. Also, by omitting the control chains containing a non-listed company, the measures of voting and cash flow rights of a listed company may also be biased. In fact, our measure of disparity turns out to be significantly higher than those reported in the existing literature, which makes use of only public firms.

Second, we adopt the KFTC's highly flexible concept of "control." This allows us to measure more accurately the true extent of control. According to the KFTC's definition, share ownership, whether direct or indirect, is not a necessary condition for a person (or a company) to wield control over firms. In addition to share ownership, other indicators of control, such as the power to appointment directors, personnel exchanges, transactions above a normal range, or usage of similar trademarks across firms in the group, are taken into account when identifying which firms are under the controlling shareholder's influence. Overly restrictive condition of share ownership can result in a downward bias of the voting right measure.

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<sup>2</sup> In the annual reports of listed firms, we can easily obtain the names of shareholders. These shareholders, however, can be a non-listed firm or a not-for-profit organization, the ownership structure of which is not disclosed to the public.

This paper is organized as follows. Section 2 discusses hypotheses and Section 3 describes the data. Sections 4 and 5 explains the measurement and methodology. Section 6 discusses the empirical results. Section 7 concludes.

## 2. Hypotheses

In this paper, we test two hypotheses and make one prediction regarding the controlling-minority ownership structure. First, we hypothesize that the controlling shareholder's group control motive is an important determinant that shapes the controlling-minority ownership structure. Here, we define group control motive as a desire to structure intra-group ownership in a way that maximizes control over the whole group at a given level of share investment in the group-affiliated firms. A controlling shareholder can achieve this by increasing his or her direct ownership in firms that can bring him or her large amounts of group-wide cash flow rights or voting rights, relative to their respective firm size (hereafter, firms with the high marginal contribution to group control).<sup>3</sup> Alternatively, a controlling shareholder can change the group's ownership structure in a way that increases the marginal contribution to group control of a firm, in which he or she has high direct ownership.

**Hypothesis 1a.** A controlling shareholder's direct ownership increases with the firm's marginal contribution to group control (alternatively, a firm's marginal contribution to group control increases with the controlling shareholder's direct ownership).

Direct ownership, however, does not have to increase proportionally. By keeping a tight control over a few key companies, and letting these *de facto* holding companies to control the remaining firms, the controlling shareholder can control over the whole group. Thus, we may see very low direct shareholdings in a large number of affiliates with low marginal contribution to group control, but very high direct shareholdings in a few companies with high marginal contribution to group control. This allows us to hypothesize that direct ownership may increase at an increasing rate with marginal contribution to group control.

**Hypothesis 1b.** A controlling shareholder's direct ownership increases at an increasing rate with the firm's marginal contribution to group control.

This link, however, may not be obvious *ex ante*. This is because a shareholder can obtain full control over a firm with only 50% share ownership or even with less share ownership depending upon how dispersedly its shares are held by other shareholders. If this is true, a controlling shareholder would have less incentive to increase its direct shareholding as it reaches a certain level, thus making direct shareholding increase at a decreasing rate, not at an increasing rate, with the firm's marginal contribution to group control. Thus, it becomes an empirical issue.

The second hypothesis we test is the controlling shareholder's pecuniary motive. We hypothesize that the controlling shareholder would increase his cash flow rights in a firm with high profitability or low risk.

The intuition is simple. If a firm demonstrates poor prospects by showing low profitability or high risk, the controlling shareholder may change the ownership structure of the firm to minimize

<sup>3</sup> In this paper, Section 4 provides the formal definition of firm's cash flow rights, voting rights, and marginal contribution to group control.

any further loss.<sup>4</sup> That is, a controlling shareholder may sell his or her direct ownership stake to an affiliated firm that is also under the controlling shareholder's control. This will decrease the controlling shareholder's cash flow rights and increase disparity in the ailing company. Furthermore, if possible, he or she may try to sell the stake at a price higher than its true value. In this case, if the controlling shareholder's cash flow rights are relatively low in the acquiring firm, there will be an illegal transfer of wealth from outside minority shareholders to the controlling shareholder.

Cash flow rights can fall even when the controlling shareholder does not sell any of his or her directly owned shares to the affiliated firms. Often, poorly performing firms need injections of new equity capital. But if a controlling shareholder is not confident of the firm's survival prospects, he or she would not participate in purchasing the newly issued shares. Instead, the controlling shareholder would instruct other affiliated firms under his or her control to participate. This would dilute the controlling shareholder's equity stake while increasing the equity stakes of other affiliated firms.

It is not hard to find actual cases of such phenomena in Korea. In 1998, SK Securities was at the brink of liquidation after several consecutive years of negative income, largely attributable to a US\$200 million loss in 1997 from its trades in Indonesian derivatives. To rescue SK Securities, an affiliated firm within the SK Group, several affiliates, including SK Trading and SK Energy Sales, injected new equity capital into the firm. This increased the equity stake of affiliated firms, but decreased that of the Chey family, the controlling shareholder.

**Hypothesis 2a.** A controlling shareholder's cash flow right rises with the firm's profitability (similarly, a firm's disparity falls with the firm's profitability).

**Hypothesis 2b.** A controlling shareholder's cash flow right falls with the firm's risk (similarly, a firm's disparity rises with the firm's risk).

We also hypothesize that there is no non-linearity between the controlling shareholder's cash flow rights and the firm's profitability (or risk). This is because there is no obvious reason to believe that a 100% cash flow right and a 50% cash flow right can effectively be the same, in a pecuniary sense, to the controlling shareholder.

**Hypothesis 2c.** A controlling shareholder's cash flow right increases at a flat rate with the firm's profitability (similarly, a firm's disparity falls at a flat rate with firm's profitability).

Lastly, but not least, we show that the disparity measures reported in the previous literature are downward biased in two important ways: (i) do not include private firms in the sample and (ii) use the concept of control that is overly restrictive.

To measure the precise voting and cash flow rights, and thus disparity between the two, one needs the ownership data of each and every firm in the control chain. But this was not possible in the existing literature since no ownership information was available for non-listed firms (see Claessens et al., 2000; La Porta et al., 2002; and Lins, 2003).<sup>5</sup>

<sup>4</sup> With regard to firm risk, however, one may suggest an opposite hypothesis. According to Demsetz and Lehn (1985), firm-specific uncertainty increases the monitoring cost of managerial performance, which thus increases the benefit of higher ownership concentration.

<sup>5</sup> Even for the listed firms, these studies use ownership data only for a subset of companies, ranging from a half to three-quarters of all listed firms in terms of market capitalization.

There are two channels how the incorporation of private firms in the computation can increase the measure of disparity. First, the disparity measure of private firms can be higher than that of public firms, which will increase the sample average measure of disparity once private firms are included in the sample. Second, by taking into account the control chain that goes through a private firm, the disparity measure of a public firm concerned will increase.

The second point can be understood more clearly by the following example. Suppose a controlling shareholder holds a 25% share in firm *A*, which is listed, and a 51% share in firm *B*, which is not listed. Furthermore, suppose that firm *B* holds a 25% share in firm *A*. If we include firm *B* in our computation, its control over firm *A*'s voting rights would be 50% ( $=25\%+25\%$ ) and the cash flow rights would be 37.8% ( $=25\%+51\%\times 25\%$ ). However, if we do not know the share ownership of the controlling shareholder in firm *B* and thus have to exclude the link through *B* from our computation, the voting and cash flow rights would be equally 25%, which is heavily downward biased.<sup>6</sup>

In most of the studies on voting-cash flow disparity, a person can become a controlling shareholder only if he owns company shares, whether directly or indirectly. But, we believe this can be an overly restrictive condition, which again results in a downward bias of the voting right measure.<sup>7</sup> Suppose a person makes a significant donation to a not-for-profit organization (NPO), sits on its board, and thus controls the voting rights on the company shares held by the NPO. In such cases, the company shares held by this NPO should be included in the computation of this person's voting rights. Yet this is not how voting rights are computed in the existing studies.

**Prediction 1.** The incorporation of private firms into the computation of disparity and the adoption of a control concept, more flexible and thus closer to reality, increase the level of disparity measure.

### 3. Data

#### 3.1. Ownership data

In this paper, we make use of a unique dataset exclusively obtained from KFTC that contains detailed information on the intra-group shareholdings of 46 large business conglomerates over a six-year period (1997–2002). For each of the firms in the 46 large business conglomerates, we have data on the number of common and preferred shares held by the controlling shareholder and by his related parties. *Related parties* include relatives, senior managers of the firm, affiliated not-for-profit organizations, and affiliated firms. In our data set, such information is available even for non-listed companies. As an example, Table 1 shows the intra-group shareholding matrix of Samsung Group in 2002.

KFTC compiles such a database to monitor and enforce compliance of its regulations imposed upon large business conglomerates. Each year in April, KFTC announces the top 30 business conglomerates, known as chaebols, in terms of their total asset size, and imposes regulations,

<sup>6</sup> In this example, the disparity measure, which is defined by voting rights minus cash flow rights, is also downward-biased.

<sup>7</sup> It will also result in a downward bias of the disparity measure. One exception would be Lins (2003). See Appendix B for detailed explanation of how Lins (2003) computes voting rights. Note, however, that his concept of control is still far more restrictive than ours.

including equity investment ceiling, ban on cross-shareholdings, and restriction on related-party transactions.<sup>8</sup> The regulations are explained in greater detail in Appendix C.

Besides the inclusion of non-listed firms and the use of a highly flexible concept of control, our dataset has other minor improvements over those used in the existing literature. For example, we consider even those shareholders who own less than 5% of shares outstanding. Existing studies use datasets that contain information only on block shareholders holding more than 5% of outstanding shares. Another improvement is that we distinguish individual family members when identifying the controlling shareholder, and use a clear definition of the term “relatives.” A relative is classified as a party with a blood relationship of eight degrees or less (four or less if he/she has a blood relationship with the controlling shareholder’s spouse) to the controlling shareholder.

### 3.2. Sample selection

Our original dataset contains data on 65 conglomerates. We eliminated the 18 conglomerates controlled by a state-owned enterprise, where the controlling shareholder is a company and not a natural person, or by a newly privatized firm.<sup>9,10</sup> This means that we only investigate those conglomerates controlled by an individual, in line with the concept of chaebol, and thus focus on the decision of a controlling shareholder as an individual. We do not include the Lotte Group, since KFTC does not have its complete intra-group shareholding information. This is because the affiliated firms of Lotte Group are established not only in Korea, but also in Japan, and KFTC does not have ownership data for the firms located in Japan. Thus, we use 46 business conglomerates. The total number of firm-years is 3931 (see Table 4 for summary statistics).

### 3.3. Other variables

To test the hypotheses in this paper, we merge the ownership data with other firm-level variables, which we obtained from the National Information and Credit Evaluation, Inc. (NICE). Since ownership-structure-related variables are used as a dependent variable in our regression analyses, we make sure that other firm-level variables are measured prior to the ownership-structure-related variables. As such, they are measured during or on the last day of the fiscal year, which ends before April. When the fiscal year changes during the sample year, we keep only those years that cover twelve full months. Table 3 shows the list of variables along with their definitions. Table 4 provides some summary statistics for each variable.

<sup>8</sup> In 2002, KFTC changed the way it designates large business conglomerates. Instead of ranking them based on asset size (e.g. top 30), it now uses asset size thresholds (e.g. above 5 trillion won).

<sup>9</sup> These conglomerates have only a small number of affiliated firms, which makes the disparity measure close to zero throughout the sample period, and thus makes it inappropriate to study the determinants of disparity, which is one of this paper’s main topics.

<sup>10</sup> 18 large business conglomerates, the controlling shareholder of which is not a natural person: Daewoo Electronics, Daewoo Motors, Daewoo Shipbuilding & Marine Engineering, Hanaro Telecom, Hyundai Oil, KARICO, KEPCO, Kia, KOGAS, Korea Highway Corporation, Korea Land Corporation, Korea National Housing Corporation, KOWACO, KT, KT&G, MBC, POSCO, S-Oil. We also drop Kohap group in year 2001, the year of which its controlling shareholder is no longer a natural person.

Table 1

Intra-group shareholding matrix of Samsung Group in 2002

	Same person	Relatives	NPO	Managers	Sub-total	Treasury stocks	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
[1] Samsung Corporation	1.42	0.01	0.23	0.18	0.42	1.96	–	–	–	4.66	–	–	–	–	–
[2] Cheil Industries	–	–	2.58	0.33	2.91	4.97	–	–	–	–	–	–	–	–	–
[3] Samsung Electronics	2.00	1.55	0.08	0.64	2.27	4.23	3.87	–	–	–	–	–	–	–	–
[4] Samsung SDI	–	0.00	0.74	0.29	1.03	2.55	–	–	20.01	–	–	–	–	–	–
[5] Samsung Corning	–	–	–	0.00	0.00	–	–	–	48.36	–	–	–	–	–	–
[6] Samsung Electro-Mechanics	–	0.12	–	0.84	0.96	0.50	–	–	23.69	–	–	–	–	–	–
[7] Samsung Petrochemical	–	–	–	–	0.00	–	10.00	16.39	9.93	–	–	–	–	–	–
[8] Samsung Heavy Industries	–	–	–	0.02	0.02	–	–	0.42	17.62	–	–	2.39	–	–	–
[9] The Shilla Hotels & Resorts	–	–	–	0.08	0.08	3.06	–	–	5.11	–	–	–	–	–	–
[10] Samsung Engineering	–	–	–	0.28	0.28	0.03	–	13.10	–	5.09	–	–	–	–	–
[11] Cheil Communications	–	–	–	0.20	0.20	8.26	12.64	–	2.61	–	–	–	–	–	–
[12] Samsung Lions	2.50	–	–	–	0.00	–	–	7.50	15.00	27.50	–	–	12.50	–	–
[13] Samsung Atofina	0.44	–	–	0.18	0.18	2.44	37.45	0.85	3.78	10.32	–	10.19	–	–	–
[14] Samsung Economic Research Institute	–	–	–	–	0.00	–	–	1.00	1.00	29.80	28.60	–	23.80	–	1.00
[15] Samsung Fine Chemicals	–	–	–	0.25	0.25	–	–	5.59	3.16	8.39	11.49	–	0.26	–	2.24
[16] Samsung Corning Precision Glass	–	–	–	–	0.00	–	–	–	42.57	–	–	–	–	–	–
[17] S1	–	–	–	0.01	0.01	0.07	–	–	–	11.03	–	–	–	–	–
[18] Samsung Everland	3.72	50.77	0.88	–	51.65	–	–	1.48	4.00	–	4.00	–	4.00	–	–
[19] Samsung SDS	–	22.82	–	6.78	29.60	–	17.96	–	21.27	–	–	8.29	–	–	–
[20] Samsung Techwin	–	–	–	0.03	0.03	12.75	3.85	0.10	22.93	–	–	–	–	–	–
[21] Samsung Life Insurance	4.54	4.68	4.68	2.50	11.86	–	–	–	–	–	–	0.60	–	–	–
[22] Samsung Fire & Marine Insurance	0.31	–	3.58	0.05	3.63	8.47	–	–	–	–	–	–	–	–	–
[23] Samsung Card	–	0.10	–	–	0.10	–	–	9.44	–	58.59	–	–	22.31	–	–
[24] Samsung Securities	0.10	0.01	0.29	0.46	0.76	3.63	0.27	–	–	–	–	–	–	–	–
[25] Samsung Investment Trust Management	–	17.95	–	0.38	18.33	–	–	–	–	–	–	–	–	3.89	–
[26] Samsung Venture Investment	–	–	–	–	0.00	–	–	–	16.33	16.33	–	17.00	–	17.00	–
[27] Samsung Networks	–	23.26	–	6.29	29.55	–	19.47	–	23.07	–	–	8.99	–	–	–

Table 1 (continued)

	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]
[1] Samsung Corporation	–	–	–	–	–	–	–	–	–	–	–	4.81	–	–	0.00	0.01	–	–
[2] Cheil Industries	–	–	–	–	–	–	–	–	–	–	–	0.01	–	4.00	0.00	–	–	–
[3] Samsung Electronics	–	–	–	–	–	–	–	–	–	–	–	6.94	1.21	–	0.02	–	–	–
[4] Samsung SDI	–	–	–	–	–	–	–	–	–	–	–	0.02	–	–	0.00	0.17	–	–
[5] Samsung Corning	–	–	–	–	–	–	–	–	–	–	–	1.00	–	–	–	–	–	–
[6] Samsung Electro-Mechanics	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.00	0.05	–	–
[7] Samsung Petrochemical	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
[8] Samsung Heavy Industries	0.13	0.13	–	–	–	–	–	–	0.13	–	0.07	3.91	–	–	0.00	–	–	–
[9] The Shilla Hotels & Resorts	–	–	–	–	–	–	–	–	–	–	–	7.30	–	0.52	3.06	–	–	–
[10] Samsung Engineering	–	–	–	–	–	–	–	–	1.07	–	–	–	–	–	–	–	–	–
[11] Cheil Communications	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3.04	–	–	–
[12] Samsung Lions	–	3.00	–	–	–	–	–	–	2.00	–	–	–	–	–	–	–	–	–
[13] Samsung Atotfina	–	0.32	–	–	–	3.45	–	–	–	–	25.6	–	–	–	–	–	–	–
[14] Samsung Economic Research Institute	–	–	–	–	–	–	–	–	–	–	–	14.8	–	–	–	–	–	–
[15] Samsung Fine Chemicals	0.85	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
[16] Samsung Corning Precision Glass	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
[17] S1	–	–	–	–	–	–	–	–	–	–	–	5.34	0.97	–	1.32	–	–	–
[18] Samsung Everland	–	–	–	–	–	–	–	–	–	–	–	–	–	–	14.0	–	–	–
[19] Samsung SDS	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
[20] Samsung Techwin	–	–	–	–	–	–	–	–	0.28	–	–	1.21	–	–	1.76	–	–	–
[21] Samsung Life Insurance	–	–	–	–	–	0.47	–	–	19.3	0.35	–	–	–	–	–	–	–	–
[22] Samsung Fire & Marine Insurance	–	–	–	–	–	–	–	–	–	–	–	9.89	–	3.15	0.00	–	–	–
[23] Samsung Card	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
[24] Samsung Securities	–	–	–	–	–	–	–	–	–	–	–	11.5	5.47	2.62	–	–	–	–
[25] Samsung Investment Trust Management	–	–	–	–	–	–	–	–	–	–	–	3.56	1.19	–	65.4	–	–	–
[26] Samsung Venture Investment	–	–	–	–	–	–	–	–	–	–	16.7	–	–	–	16.7	–	–	–
[27] Samsung Networks	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

The complex intra-group shareholding structure of Samsung Group can be effectively presented in a matrix format. For the convenience of presentation, among the 63 firms classified by KFTC as Samsung affiliates, we show in this table only the 27 major firms that appear in the 2002 Samsung Group Annual Report. The fractions of shares are computed out of total outstanding common shares, including treasury stocks.

Note: “–” indicates zero shares, whereas “0.00” stands for small positive figures below 1/500 (figures above 1/500 are rounded to be 0.01).

## 4. Measurement

### 4.1. Controlling shareholder

The first step in computing control over voting rights, cash flow rights, and disparity between the two is to identify the controlling shareholders and the firms under their *de facto control*. In this study, following the method adopted by KFTC, a controlling shareholder is defined as a person who, alone or with related parties, has *de facto* control of the company. Here we explain in detail the concepts of related parties and *de facto* control.

Related parties include (i) relatives, (ii) not-for-profit organizations where the controlling shareholder, alone or with related parties, contributed 30% of total donations, (iv) not-for-profit organizations where the controlling shareholder, directly or through related parties, has a controlling influence over the appointment of directors or business activities, (v) any company whose business is controlled *de facto* by the controlling shareholder, and (vi) agents of the controlling shareholder or his related parties, including senior managers.

A controlling shareholder has a *de facto* control over a particular company if any of the following conditions are met: (i) the controlling shareholder, alone or with related parties, owns 30% of voting shares issued and is the largest shareholder, (ii) the controlling shareholder appoints the representative director or at least half of the directors, (iii) the controlling shareholder directly or through related parties has a controlling influence over corporate strategy decisions, (iv) the company concerned and another company *de facto* controlled by the controlling shareholder have a personnel exchange program in place, (v) the company and the controlling shareholder or its related parties conduct transactions of funds, assets, goods, services, or debt guarantees above a normal level, (vi) the company can be reasonably considered under social norms to be an affiliate of the business group controlled by the controlling shareholder (for example, using similar trademarks). More detailed definitions of related parties and *de facto* control are outlined in Appendix B.

One might be concerned that the concept of *de facto* control is overly subjective and the decision to classify a firm to be *de facto* controlled can be arbitrary. Such criticism, however, is unfounded, for no firm subject to the KFTC regulation petitioned against the KFTC's decision. When a firm is designated as a firm *de facto* controlled by the controlling shareholder, it will be subject to serious regulations, which can be binding and sometimes costly.<sup>11</sup> So a manager of this company would have all the reasons to find justifications not to be classified as a firm under *de facto* control. Nevertheless, no company petitioned the KFTC's decision, which implies that the KFTC designations were made based on reality, not arbitrarily.

### 4.2. Control over voting rights

In this paper, control over voting rights (hereafter voting rights) is defined as the sum of direct share ownership held by the controlling shareholder and its related parties. Assume that  $d_i$  is the direct share ownership held by the controlling shareholder in firm  $i$ . Assume also that  $r_i$  is the direct share ownership held by the related parties, including relatives, not-for-profit organizations, and senior managers under the controlling shareholders' influence. Lastly, assume

<sup>11</sup> See Appendix C for the detailed regulations.

that  $s_{ij}$  is the direct share ownership in firm  $i$  held by firm  $j$ , which is under the controlling shareholders influence. Then, a voting right for firm  $i$  can be defined by Eq. (1).

$$vr_i = d_i + r_i + \sum_{j=1}^n s_{ij} \quad (1)$$

$n$  is the number of for-profit-firms under the controlling shareholder's influence. When computing the fraction of shares, we use common shares only, and also adjust for treasury stocks, which do not have any voting rights, in accordance with the *Commercial Code*.<sup>12</sup>

Two points should be mentioned here. First, we want to differentiate between the concept of *control* and *control over voting rights*. The concept of control, as explained earlier, takes into account not only share ownership, but also other routes of control, such as the appointment of directors, personnel exchange, abnormal transaction levels, and so on. Control over voting rights, on the other hand, considers only share ownership. Thus, it is a narrower concept. Although the controlling shareholder *controls de facto* all the affiliated firms in the sample, it does not mean he has 100% control over the votes. When computing disparity, we use the concept of voting rights. Otherwise, disparity would be always “1 — cash flow rights.”

Second, our measure does not give special treatment to voting rights over 50%. It is true that once a controlling shareholder holds more than 50% of the votes, he would be able to block or pass any resolution item at the shareholders' meeting. And some might suggest that we should therefore grant special treatment to voting rights over 50%. However, we have decided against this on two grounds. First, depending upon the ownership structure of outside shareholders and how quickly they can coordinate, the threshold can be below 50%. Second, such information cannot be known *ex ante*.

#### 4.3. Cash-flow rights

Cash-flow rights are defined as sum of the products of ownership stakes held by the controlling shareholder and the family members along the voting right chain. Assume that  $f_i$  is the direct share ownership held by the controlling shareholder's family members in firm  $i$ . Family members include spouse and relatives that are within certain degrees of kinship.<sup>13</sup> Shares held by senior managers or not-for-profit organizations are excluded from the computation of cash-flow rights. Thus, cash flow rights in firm  $i$  can be computed by Eq. (2).<sup>14</sup>

$$cfr_i = d_i + f_i + \sum_{j=1}^n s_{ij}(d_j + f_j) + \sum_{j=1}^n s_{ij} \sum_{k=1}^n s_{jk}(d_k + f_k) + \dots \quad (2)$$

The first two terms are direct ownership levels of the controlling shareholder and his family members. The subsequent terms are the indirect ownership levels of the controlling shareholder and his family members through affiliated for-profit firms. To be more specific,

<sup>12</sup> Suppose firm  $A$  holds 10% of firm  $B$ 's total outstanding common shares, which includes treasury stocks. If the fraction of treasury stocks is 5% out of the total outstanding common shares, the adjusted fraction of voting right is  $(0.1)/(1-0.05)=0.105$  (10.5%).

<sup>13</sup> See Appendix B for detailed explanation of relatives.

<sup>14</sup> The cash-flow rights algorithm is taken from Kim (2000).

the third term is indirect ownership in firm  $i$  through firm  $j$  ( $j$  can take values from 1 to  $n$ ). The fourth term is indirect ownership in firm  $i$  through firm  $k$  and firm  $j$  ( $k$  can also take values from 1 to  $n$ ).

To simplify, we can express the cash-flow rights of all for-profit firms in a matrix. Let  $d$  and  $f$  be  $(n \times 1)$  vectors of direct ownership levels held by the controlling shareholder and his family members. Let  $S$  be  $(n \times n)$  matrix of share ownership of for-profit firms in other for-profit firms.<sup>15</sup> Then, Eq. (3) computes the cash-flow rights of all for-profit firms under the controlling shareholder's influence.

$$\text{cfr} = (d + f) + S(d + f) + S^2(d + f) + S^3(d + f) + \dots \quad (3)$$

Eq. (3) can be further simplified by using an inverse matrix.

$$\text{cfr} = (I - S)^{-1}(d + f) \quad (4)$$

#### 4.4. Disparity

In this paper we use the difference between voting and cash flow rights as our measure of disparity.<sup>16</sup> As for group-level disparity, it can be easily computed by a weighted average of firm-level disparities. Book equity values are used as weights. We treat firms with negative book equity as missing values.

Table 2 shows the voting rights, cash-flow rights, and the disparity of each firm in Samsung Group as of April 2002. Out of the 63 firms in our sample classified by the KFTC as Samsung Group affiliates, for the simplicity of presentation, we show only the 27 major firms that appear in the 2002 Samsung Group Annual Report. The firms are ranked in terms of their degree of disparity. One can see that there is a plenty of dispersion in the disparity measure across firms, ranging from 8% to 97.6%. Samsung Electronics, the largest company in Korea, has a disparity of 11.7%. The controlling shareholder, Mr. Kun-Hee Lee, has a cash flow right of 5.3% and a voting right of 17.0%. On the other hand, Samsung Card, which experienced a business failure in 2003 and was acquired by Samsung Life Insurance, has a disparity of 84.8%. While the controlling shareholder, Mr. Kun-Hee Lee, has a cash-flow right of only 3.6% in Samsung Card, he controls 88.4% of the voting rights.

#### 4.5. Marginal contribution to group control

One challenge in testing our first hypothesis (existence of group control motive) is finding an objective algorithm to measure how each firm is important in the group control chain. This task can be done by making use of our unique intra-group shareholding matrix. Here we quantify the marginal contribution to group control of firm  $j$  by the amount of additional cash flow rights the controlling shareholder would gain in other companies by having company  $j$  under his control as a

<sup>15</sup> Elements in the diagonal are zero, since fractions of shares are already adjusted for treasury stocks.

<sup>16</sup> There are studies that use the ratio, instead of the difference between the two, or the difference scaled by voting rights: La Porta et al. (1999) and Joh (2003) use [voting rights – cash-flow rights]; Claessens et al. (2000) and Mitton (2002) use [cash-flow rights/voting rights]; Lins (2003) uses [voting rights/cash-flow rights]; and Fan and Wong (2002) and Haw et al. (2004) use [voting rights – cash-flow rights]/[voting rights].

Table 2  
Firm-level disparity of Samsung Group in 2002

Rank	Name	Control right	Cash-flow right	Disparity
1	Cheil Industries	0.082	0.002	0.080
2	Samsung Corporation	0.115	0.025	0.090
3	Samsung Electronics	0.170	0.053	0.117
4	The Shilla Hotels & Resorts	0.174	0.019	0.155
5	Samsung Fire & Marine Insurance	0.202	0.027	0.175
6	Samsung Life Insurance	0.380	0.201	0.179
7	S1 Corporation	0.206	0.013	0.192
8	Cheil Communications	0.202	0.006	0.195
9	Samsung Securities	0.227	0.028	0.199
10	Samsung Engineering	0.213	0.008	0.206
11	Samsung SDI	0.218	0.011	0.207
12	Samsung Heavy Industries	0.248	0.018	0.230
13	Samsung Electro-Mechanics	0.248	0.014	0.234
14	Samsung Techwin	0.346	0.020	0.325
15	Samsung Fine Chemicals	0.353	0.009	0.344
16	Samsung Petrochemical	0.363	0.008	0.355
17	Samsung Everland	0.945	0.557	0.388
18	Samsung Corning Precision Glass	0.426	0.023	0.403
19	Samsung Corning	0.494	0.027	0.466
20	Samsung SDS	0.771	0.245	0.526
21	Samsung Networks	0.811	0.251	0.560
22	Samsung Lions	0.700	0.055	0.645
23	Samsung Investment Trust Management	0.924	0.206	0.718
24	Samsung Card	0.884	0.036	0.848
25	Samsung Atofina	0.949	0.025	0.925
26	Samsung Economic Research Institute	1.000	0.053	0.947
27	Samsung Venture Investment	1.000	0.024	0.976

Among the 63 firms classified by the Fair Trade Commission as affiliated firms, we show in this table only the 27 major firms that appear in the 2002 Samsung Group Annual Report.

fraction of company  $j$ 's book equity value. Let this measure be named *marginal contribution index* ("con"). Eq. (5) shows the formula of firm  $j$ 's marginal contribution index:

$$\text{con}_j = \frac{\sum_{i=1, i \neq j}^n E_i \text{cfr}_i - \sum_{i=1, i \neq j}^n E_i \text{cfr}_i^{-j}}{E_j} \quad (5)$$

$E_i$  is firm  $i$ 's book value of equity.  $\text{cfr}_i$  is the cash flow rights computed for firm  $i$  when all affiliated firms of each chaebol group are included in the group-ownership structure. This means that  $\text{cfr}_i$  is the cash flow rights computed for firm  $i$  when firm  $j$  is included in the group-ownership structure. On the other hand,  $\text{cfr}_i^{-j}$  is the cash flow rights computed for firm  $i$  when firm  $j$  is excluded from the group-ownership structure.  $E_j$  is the book value of equity of firm  $j$ . The first term in the numerator measures the total cash flow rights the controlling shareholder would receive from other companies  $i$  ( $i \neq j$ ) when firm  $j$  is included in the chaebol group. On the other hand, the second term in the numerator captures the total cash flow rights the controlling shareholder would receive from other companies  $i$  ( $i \neq j$ ) if firm  $j$  were excluded from the chaebol group. We divide the difference by the company's book equity value to control for a size effect, since larger firms are more likely to have greater contributions to group control.

The index can have a value equal to zero. This happens when firm  $j$  does not have any equity investment in other affiliated firms.<sup>17</sup> It should also be noted that the index has no upper bound. If there is no restriction on leverage or the length of the equity investment chain, the indices can be well above “1.”

Here it should be noted that we do not use control over voting rights in the numerator when computing for marginal contribution to group control. This is because control over voting rights,  $vr_i$ , is computed for firm  $i$  under the assumption that the controlling shareholder always maintains 100% control over other firms, even if the exclusion of firm  $i$  may weaken the control over those firms. This feature does not allow us to identify the location or the relative importance of firm  $i$  in the control pyramid, and thus its contribution to group control.

For example, suppose there is a group with a pure pyramidal structure composed of three firms  $A$ ,  $B$ , and  $C$ : the controlling shareholder holds a 50% share in firm  $A$ ; firm  $A$  holds a 50% share in firm  $B$ ; and firm  $B$  holds a 50% share in firm  $C$ . In this case, the controlling shareholder’s control over voting rights is 50% in each firm. Now let’s use control over voting rights,  $vr_i$ , instead of cash flow rights,  $cfr_i$ , in Eq. (5), to compute the marginal contribution index of firm  $A$ ,  $B$ , and  $C$  (assuming equal firm size). When firm  $A$  is excluded, the controlling shareholder’s control over voting rights in firm  $B$  and  $C$  drops from 100% (50% in each firm) to 50% (0% in firm  $B$  and 50% in firm  $C$ ), thus the index being 50% ( $=100 - 50$ ). When firm  $B$  is excluded, the controlling shareholder’s control over voting rights in firm  $A$  and  $C$  drops from 100% (50% in each firm) to 50% (50% in firm  $A$  and 0% in firm  $C$ ), thus the index being 50% ( $=100 - 50$ ). Although firm  $A$  clearly is a firm that contributes to group control more than firm  $B$ , their respective indices are the same when using control over voting rights in the computation.

On the other hand, our measure of marginal contribution index, which uses cash flow rights in the numerator, is free from this problem. It effectively allows us to identify the location or the relative importance of firm  $i$  in the control pyramid, and thus its contribution to group control. Using the same example of a group composed of firms  $A$ ,  $B$ , and  $C$ , let us now compute the marginal contribution index using cash flow rights  $cfr_i$ , instead of voting rights,  $vr_i$  (again, assuming equal firm size). When firm  $A$  is excluded, the controlling shareholder’s cash flow rights in firm  $B$  and  $C$  drops from 37.5% (25% in firm  $B$  and 12.5% in firm  $C$ ) to 0%, thus the index being 37.5% ( $=37.5 - 0$ ). When firm  $B$  is excluded, the controlling shareholder’s cash flow right in firm  $A$  and  $C$  drops from 62.5% (50% in firm  $A$  and 12.5% in firm  $C$ ) to 50% (50% in firm  $A$  and 0% in firm  $C$ ), thus the index being 12.5% ( $=62.5 - 50$ ). Firm  $A$ , which clearly is the firm that contributes to group control more than firm  $B$ , has an index value that is higher than that of firm  $B$ .

#### 4.6. Profitability and risk

In our analyses, we measured firm profitability by (EBIT/Asset), which is available even for non-listed firms.<sup>18</sup> To check for robustness, we try alternative measures of firm profitability: (Ordinary income/Assets) and (Net income/Assets). Ordinary income is an income statement

<sup>17</sup> Marginal contribution index can be zero for another reason. Say a controlling shareholder controls company  $A$  without holding any of its shares directly, while company  $A$  exclusively owns company  $B$ . Also assume company  $B$  has equity stakes in companies  $C$  and  $D$ . In such a situation, the marginal contribution index for company  $B$  is zero (since the controlling shareholder has no share of company  $A$ ).

<sup>18</sup> In Korea, the *Act on External Audit of Stock Companies* require even non-listed firms above a certain size to receive an external audit, which is why such data is available.

item unique to Korea; it is defined as earnings before taxes and extraordinary items, but after interest payments. We also try a three-year average in addition to a single-year measure of profitability. A greater coefficient on the three-year average indicates that the controlling shareholder responds with a lag to changes in profitability.

To preserve sample size, firm risk is also measured using accounting data. Specifically, we compute five-year standard deviations of our profitability measures. To check for robustness, we also try *beta*, which is estimated from a market model where the KOSPI return is used as a proxy for market return. KOSPI is a value-weighted market index comprising all of the listed companies in the Korea Stock Exchange (KSE). One advantage of using *beta* as our measure of risk is that it assumes that the controlling shareholder of a business group holds a well-diversified portfolio of companies, which is in fact true in the case of Korea. Table 3 gives a more detailed explanation on our profitability and risk measures.

Table 3  
Definition of other variables

Variable name	Definition
1 year (EBIT/Assets)	EBIT divided by book value of assets (measured at previous fiscal year end), winsorized at the 1st and the 99th percentile values.
1 year (OI/Assets)	Ordinary income divided by book value of asset (measured at previous fiscal year end), winsorized at the 1st and the 99th percentile values. Ordinary income is earnings before taxes and extraordinary items.
1 year (NI/Assets)	Net income divided by book value of assets (measured at previous fiscal year end), winsorized at the 1st and the 99th percentile values.
1 year SD (5 years)	Standard deviation of (EBIT/Assets) over the past 5-year period. It is winsorized at the 1st and the 99th percentile values.
3 years SD (5 years)	3-year average of 1 year SD (5 years).
Beta	Beta is estimated from a market model where the KOSPI return is used as a proxy for market return. KOSPI is a value-weighted market index comprising all the listed companies on the Korea Stock Exchange (KSE). For each year, we estimate Beta using monthly data over the past three-years. Note that Beta is replaced by a missing value if the underlying regression uses less than 20 observations. Beta is winsorized at the 1st and the 99th percentile values.
Marginal contribution index	Amount of additional <i>cash flow rights</i> a controlling shareholder would gain in other companies by having company <i>j</i> under her control as a fraction of the company <i>j</i> 's book equity value. See Section 4, Eq. (5). The index is winsorized at the 1st and the 99th percentile values.
Leverage	Book value of debt divided by the book value of assets. This measure is first winsorized at the 1st and the 99th percentile values, and then $\ln[(\text{debt}/\text{asset}) + 1]$ is computed. “1” is added since there “0” values, even after winsorization.
Years of operation	Number of years since the company's establishment. This measure is logged.
Public company	1 if the company is listed either in KSE or KOSDAQ; 0 otherwise.
Firm size	Book value asset minus book value of debt (unit: billion won). Negative book values are treated as missing values. This measure is logged after adding “1.” This is to make this measure non-negative after taking the log.
Financial institution	1 if the company is a financial institution; 0 otherwise.
Group size	Book value of equity summed across all affiliated firms (unit: billion won). This measure is logged after adding “1.” This is to make this measure non-negative after taking the log.
Number of affiliates	Number of firms controlled by a chaebol the company is affiliated to. This measure is logged.
Group with financial institution	1 if the company is affiliated to a group with a financial institution; 0 otherwise.

All accounting measures are from the National Information and Credit Evaluation, Inc. (NICE). Since disparity is used as a dependent variable in our regression analyses, we make sure that other firm-level variables are measured prior to the disparity variable. As such, they are measured during or on the last day of the fiscal year, which ends before April. When the fiscal year changes during the sample year, we only keep those years which cover a full 12 months.

## 5. Methodology

### 5.1. OLS regressions

To investigate whether a firm's choice of direct ownership (or cash flow rights) varies according to its marginal contribution to group control, profitability, and risk, we run pooled OLS regressions with fixed year and group effects. As a robustness check, we also run year-by-year regressions, and a firm fixed-effects model.

We use slightly different specifications for Hypothesis 1 (group control motive) and Hypothesis 2 (pecuniary motive). In regressions that test Hypothesis 1, we use direct ownership as our left-hand-side variable (see Eq. (6) below). On the other hand, in regressions that test Hypothesis 2, we use cash flow rights as our left-hand-side variable (see Eq. (7) below). Direct ownership makes more sense in Eq. (6) because controlling shareholders would want to increase their *direct*, rather than *indirect*, ownership in firms with high marginal contribution to group control. This is because of the fear that the whole group can be taken over when the controlling shareholder loses his or her control over such firms. As for Hypothesis 2, we use cash flow rights because they capture pecuniary benefits better than direct ownership.

$$\text{Direct Ownership} = f(\text{marginal contribution to group control, profitability, firm risk, year dummies, group dummies, other control variables}) + \varepsilon \quad (6)$$

$$\text{Cash Flow Rights} = f(\text{marginal contribution to group control, profitability, firm risk, voting rights, year dummies, group dummies other control variables}) + \varepsilon \quad (7)$$

It should also be noted that we include voting rights on the right-hand-side for Hypothesis 2, but not for Hypothesis 1. This is because, in Hypothesis 2, we are more interested in how the controlling shareholder allocates his or her cash flow rights for a given level of voting rights. This is not the case in Hypothesis 1 where we are more interested in the absolute level of direct ownership. In Eq. (7), even if we switch our left-hand-side variable from cash flow rights to the disparity, the coefficients on right-hand-side variables will remain to have the same absolute values, with opposite sign, since we include voting rights as a right-hand-side variable in Eq. (7). Also note that all three variables of interest – marginal contribution to group control, profitability, and firm risk – are included in both regression models.

### 5.2. Tobit regressions

We also run a Tobit model for the direct ownership equation. This is because direct ownership is continuous over strictly positive values, but zero for a significant fraction of the population (approximately 45%). In this model, we assume that the observed variable for direct ownership equals its latent variable only when the latent variable is positive, and zero otherwise.

### 5.3. Heckman's two-step regressions

As mentioned earlier, direct ownership has a value of zero for a significant fraction of observations. This raises the possibility that the decision on direct ownership may be made in two steps. First being a binary choice of having a non-zero direct ownership or not. Second being a

decision on the level of non-zero direct ownerships. If the first decision is made randomly, the OLS coefficients would be unbiased. However, it is more realistic to assume that the decision is nonrandom, which calls us to try a different model.

Thus, we also try to estimate the two-step model following Heckman (1979), which takes care of the sample selection bias problem. To fit our data to the model, we first treat observations with zero direct ownership as observations not being selected. Then, we run a Probit model where the dependent variable indicates whether or not the group controlling shareholder has a non-zero direct ownership. Next, we run the original OLS model with the inverse Mills ratio as an extra control. The second step OLS model would give the unbiased coefficients.

We choose years-of-operation as the variable that appears in the first step equation (the selection equation), but not in the second step. In a chaebol-like ownership structure, the controlling family would naturally have a direct share ownership in firms established in the early stages of the group formation. This is because, for the very first firms, there would not be any other affiliated firms available to take an equity stake into those firms. Once a group structure is formed, however, two forces take place. Because of greater fraction of outside shareholders, direct ownership falls with years-of-operation. But, at the same time, the group would establish new firms via its affiliates, without any direct share ownership by the controlling family. Thus, the link between years-of-operation and the fraction of direct ownership would become ambiguous. Our data actually confirms this. When we include years-of-operation into the second step equation, the coefficient turns out to be insignificant, while it is significant in the first step equation.

#### 5.4. Two-stage least squares (2SLS) regressions

Whether we test the group control motive or the pecuniary motive, we face the issue of reverse causality. That is, direct ownership (or cash flow rights) can cause our variables of interest (marginal contribution to group control and profitability), rather than the other way around. One can easily think about the case how direct ownership can cause changes in firm's marginal contribution to group control. For example, when there is a succession from a father to a son, the father could create a new firm with substantial direct ownership by his son and then make this firm the most critical firm in the group with the largest marginal contribution to group control.<sup>19</sup> If direct ownership increases marginal contribution to group control, and at the same time, marginal contribution to group control increases direct ownership, the coefficient on marginal contribution to group control can be upward-biased.

A number of recent disparity-to-performance studies also show that the causality can run from profitability to cash flow rights. For example, Joh (2003) demonstrates that Korean firms with a high disparity between voting and cash-flow rights tend to have low profitability during the pre-crisis period (1993–1997).<sup>20</sup> Black, Jang, and Kim (2006) also show that firms with high disparity tend to have low market values, measured by Tobin's  $q$ , in 2001. If profitability increases cash flow rights, and at the same time, cash flow rights increase profitability, the coefficient on profitability can be upward-biased.

<sup>19</sup> We thank the anonymous referee for providing this example.

<sup>20</sup> In her study, one potential underlying cause could be illegal value transfers (also known as tunneling) from companies with high disparity to those with low disparity.

#### 5.4.1. Two-stage least squares for group control motive

To address this endogeneity problem, we run two-stage least squares (2SLS). When estimating for the group control motive, we use firm risk as an instrumental variable (IV) for direct ownership and the public company dummy as an IV for marginal contribution to group control. That is, firm risk is included in the direct ownership equation, but not in the equation for marginal contribution to group control. Likewise, the public company dummy is included in the equation for marginal contribution to group control, but not in the direct ownership equation.

*Firm risk* qualifies to be a reasonable IV for direct ownership. First, firm risk may vary across different industries, but for a given industry, firm risk is more or less exogenous. Second, theory and empirical evidence show that it is highly correlated with direct ownership. According to [Demsetz and Lehn \(1985\)](#), firm-specific uncertainty increases the monitoring cost of managerial performance, which thus increases the benefit of higher ownership concentration. In this case, there should a positive correlation between the two. On the other hand, if the pecuniary motive hypothesis is true, direct ownership and firm risk should be negatively correlated. In his 2SLS analyses, [Chang \(2003\)](#) also use firm risk as an IV for inside ownership when studying its relationship with firm performance. Third, there is no reason to believe that firm risk is strongly correlated with marginal contribution to group control. The OLS results of this paper indeed show that the firm risk is highly correlated with direct ownership, but not with marginal contribution to group control (see [Table 5](#), Panel B, Eqs. (1) and (6)).

The *public company dummy* also shows features as a reasonable IV for marginal contribution to group control. First, although the IPO decision is endogenous, once a firm goes public, it tends to remain so. Also, when a firm is newly established, it tends to remain as a private firm for a considerable number of years. In other words, it is a very sticky variable. Second, one can easily conjecture that it can be highly correlated with marginal contribution to group control. Suppose there is a group controlling shareholder that whishes to raise capital by going public, but at the same time fears that he might lose control of the newly listed firm. In this case, the group controlling shareholder may allow only those firms with low contribution to group control to go public, since it will not threaten his control over the whole group even if the newly listed firm is taken over. Thus, it results in a negative correlation between the public company dummy and marginal contribution to group control. Indeed, the OLS results of this paper show that the two are highly correlated (see [Table 5](#), Panel B, Eq. (6)). Third, although one can conjecture that public firms would generally have a lower level of direct ownership, the link proves to be very weak in our data (see [Table 5](#), Panel B, Eq. (1)).

#### 5.4.2. Two-stage least squares for pecuniary motive

When estimating for the pecuniary motive, we use marginal contribution to group control as an instrumental variable (IV) for cash flow rights and the financial institutions dummy as an IV for profitability. That is, marginal contribution to group control is included in the cash flow rights equation, but not in the profitability equation. Likewise, the financial institutions dummy is included in the profitability equation, but not in the cash flow rights equation.

Marginal contribution to group control qualifies to be a reasonable IV for cash flow rights. First, as the empirical results of this paper show, it is highly correlated with direct ownership (for example, see [Table 5](#) Panel B, Eqs. (1)–(3)), which is in turn highly correlated with cash flow

rights (see [Table 9](#), Eqs. (3) and (4)). Second, although one can conjecture that companies on the top of the pyramid tend to be more profitable (a tunneling story), this link proves to be very weak in our data.

The *financial institutions dummy* also shows features as a reasonable IV for profitability. First, the financial institutions dummy is more or less exogenous. It is extremely rare for a financial institution to transform itself into a non-financial institution, and vice versa. Second, the OLS results in this paper show that it is highly correlated with firm profitability (see [Table 9](#), Eqs. (3) and (4)). In particular, one can easily conjecture a negative correlation between the two in Korea. In the past, Korean chaebols are known to regard financial institutions not as a profit-making entity, but as a source of easy credit for other affiliate firms. Thus, it results in a negative correlation between the two variables. Third, the OLS results in this paper show that the financial institutions dummy is not correlated with cash flow rights (see [Table 9](#), Eqs. (1) and (2)), while strongly correlated with profitability.

### 5.5. Other econometric issues

The other econometric challenge is Korea-specific. As can be seen in Appendix C, the KFTC regulations changed during the sample period, and this could have influenced the share ownership behavior by the controlling shareholders. Among the five regulations listed, two (“ban on new debt guarantees” and “board approval and disclosure of related parity transactions”) are not directly related to share ownership. Of the remaining three, two other regulations (“ban on cross-shareholdings” and “no voting rights for financial institutions on shares issued by affiliated firms”) changed only in the very last year of our sample. Thus, the only regulation of concern to us is the “upper ceiling on equity investment.”

Until February 1998, a 25% upper ceiling was applied to all the firms within the top 30 chaebols, except for financial institutions. One of the major reasons to impose such a regulation was to limit equity investment among affiliated firms, and thus reduce disparity between voting and cash-flow rights. In February 1998, however, this regulation was unexpectedly lifted in the name of facilitating the corporate restructuring of crisis-hit chaebol firms. Then, in April 2001, the regulation was restored, and in January 2002 additional moderate changes were made.<sup>21</sup>

Given this information, we can identify a period that is not contaminated by government regulation: a period between February 1998 and March 2001. Since disparity is measured each year in April, yearly regressions in 1999 and 2000 should be free from any regulatory influence. Yearly regressions in 1998 and 2001, however, could be partly contaminated. With regard to the 1998 regression, firms were subject to regulation during a 10-month period from April 1997 and January 1998. In case of the 2001 regression, it may be influenced because the bill to restore the upper ceiling on equity investment was passed in December 1999, and firms knew that the regulation would be binding from April 2001. Thus, the controlling shareholder must have changed her shareholdings from the second half of 2000 at the latest to comply with the regulation soon to be effective. To see if our results are robust to such regulatory changes, we run year-by-year regressions and see if the coefficients are greater in year 1999 and 2000.

However, it should also be noted here that the upper ceiling on equity investment tends to weaken, not strengthen, the link between our proposed determinants and disparity. This means that the coefficients we obtain are downward biased in sample years other than 1999 and 2000. Thus, any control of the regulation effect will strengthen, not weaken, the coefficients.

<sup>21</sup> The legislation to restore the regulation passed in December 1999 and a 15-month grace period was allowed.

### 5.6. Control variables

Besides voting rights, a number of other control variables are used in this paper. At the firm level, we include years-of-operation, a public company dummy, firm size (book equity value), a financial institution dummy, and leverage (debt-to-asset ratio). At the group level, we add group size, number of affiliated firms within the group, and a dummy variable that identifies groups with a financial institution. Table 3 provides definitions for each of these control variables.

The relationship between *years-of-operation* and cash flow rights (or direct ownership) is ambiguous. Older firms tend to have large equity stakes by outside shareholders, thus lowering their level of voting rights and, consequently, the cash flow rights. This results in a negative correlation. Years-of-operation, however, can also be positively related to cash flow rights (or direct ownership). One explanation is that controlling shareholders have an incentive to establish new firms as a subsidiary of an existing company, since by doing so they can reduce the risk of entering a new business. Since it is a subsidiary with no (or little) direct ownership, it will have a low level of cash flow rights. As for the relationship between years-of-operation and marginal contribution to group control it is likely to be positive. Older firms tend to have more investments in other firms, and not vice versa.

*Firm size* (book equity value) can be negatively related to cash flow rights (or direct ownership). That is, large firms tend to have large equity stakes by outside shareholders, thus lowering the level of voting rights and, consequently, the cash flow rights (and direct ownership). By using book equity value as a proxy for firm size, we retain as many observations as possible. As for the *public companies dummy*, its relationship to cash flow rights (or direct ownership) is ambiguous. On the one hand, public companies tend to have large equity stakes by outside shareholders, thus lowering the level of voting rights and, consequently, the cash flow rights (direct ownership). This results in a negative relationship. But, public companies are also more prone to takeovers, which give the group chairman an incentive to allow only the firms with high direct ownership to be listed. This results in a positive relationship.

When it comes to marginal contribution to group control, however, it would be negatively related with the public company dummy, while positively related with firm size. As mentioned earlier, a group controlling shareholder may allow only those firms with low contribution to group control to go public, since it will not threaten his control over the whole group even if the newly listed firm is taken over. As for firm size, larger firms would have more assets to invest in other firms, thus having a higher contribution to group control. This can be the case even if our measure is scaled by firm size. This is so if investment in other firms rises at an increasing rate with firm size.

Group controlling shareholder may have a smaller cash flow rights (and direct ownership) in *financial institutions* in Korea. In the past, many chaebol-controlled financial institutions were known to be used as a lending vehicle to support other industrial firms within the chaebol group. They were not regarded as a separate profit-making entity. Thus, controlling shareholders had an incentive to keep the level of cash flow rights, in such financial institutions, low. Otherwise, their losses would be transferred to the controlling shareholder.

*Leverage* (the debt-to-asset ratio) can be either positively or negatively related to cash flow rights. A controlling shareholder may want to lower his direct ownership in highly levered firms, where the risk to equity holders is high. Thus, there is a negative relationship with the cash flow rights. Conversely, leverage may also be positively related to cash flow rights. Notice that there are two ways for a controlling shareholder to externally finance a project without diluting his or her voting rights in the firm. One is issuing debt and the other is issuing equity to affiliated firms.

If a firm is highly leveraged, it means that the controlling shareholder has been relying less on the latter method, thus resulting in a lower disparity (e.g. higher cash flow rights). Leverage can be positively related to marginal contribution to group control as well. By leverage, a firm can gather more resources to invest in other firms, thus a higher marginal contribution to group control.

*Group size* is the sum of each affiliated firm's book equity value. Again, book equity is used so as to maximize the number of observations in the sample. We conjecture that firm-level disparity will increase – so, cash flow rights will decrease – with group size. That is, if there is a large-sized affiliated firm within the group, there will be a greater amount of funds available for equity investment into other affiliated firms. Similar logic can be applied to the *number of affiliated firms*. The greater the number of affiliated firms, the greater the amount of funds available for equity investment into other affiliated firms, thus increasing firm-level disparity (or decreasing cash flow rights). Firms that are part of a chaebol group that includes a financial institution may also have a higher degree of firm-level disparity (or lower degree of cash flow rights). This is because a financial institution is an efficient vehicle for a controlling shareholder to strengthen his control over the group. There are two reasons for this. First, a financial institution is usually highly leveraged, and thus only a small amount of capital is required to acquire a controlling stake. Second, financial institutions can use their creditors' money to finance its equity investment in to other affiliated firms.<sup>22</sup>

## 6. Results

### 6.1. Summary statistics

Panel A of **Table 4** reports summary statistics of each variable used in this paper. The median voting rights measure is 73.17%, while the median cash flow rights measure is only 12.33%. The median disparity is 45.21%. **Table 4** also shows that the levels of voting rights, cash flow rights, and disparity are higher for private firms. For example, the median disparity is 54.35% for private firms, but only 17.26% for public firms.

Another important result from Panel A is that the median value of marginal contribution index is zero. In fact, more than half of 3465 firm-years have zero index values. This led us to run the two-step Heckman model as explained earlier. Also, as can be seen in Panel A, the maximum value of marginal contribution index is 3.45, which means that the additional cash flow rights generated by this firm is 3.45 times greater than the firm's book equity. These actual index figures are consistent with reality. The firms with the highest marginal contribution index in each group in 2002 are Samsung Everland (Samsung Group), LG Corp (LG Group), and SK C&C (SK Group), and each of these firms is commonly regarded by the investment community in Korea as the *de facto* holding company of their respective groups. This strongly suggests that our measure is reliable.

Panel A also shows that 20.12% of the firms in our sample are firms either listed on the Korea Stock Exchange (KSE) or registered on the KOSDAQ stock market. Financial institutions comprised 13.3% of our sample. The median number of affiliates for each chaebol group was 30 (=exp(3.4012)).

Panel B of **Table 4** compares the level of disparity with the existing literature. The first column computes disparity as a difference between voting and cash flow rights. The second column

<sup>22</sup> As can be seen in Appendix C (Regulation of Large Business Conglomerates in Korea), financial institutions are not subject to the 25% upper ceiling on equity investment.

Table 4  
Summary statistics

Panel A: summary statistics							
Variable name	Sample	# of observations	Mean	Median	SD	Min	Max
Voting right	Full	3931	0.6776	0.7317	0.3111	0.0000	1.0000
	Private	3140	0.7598	0.8986	0.2809	0.0000	1.0000
	Public	791	0.3511	0.3140	0.1855	0.0000	1.0000
Cash flow right	Full	3931	0.2061	0.1233	0.2392	0.0000	1.0000
	Private	3140	0.2215	0.1278	0.2566	0.0000	1.0000
	Public	791	0.1450	0.0989	0.1354	0.0000	0.7886
Disparity	Full	3931	0.4715	0.4521	0.3144	0.0000	1.0000
	Private	3140	0.5384	0.5435	0.3081	0.0000	1.0000
	Public	791	0.2061	0.1726	0.1617	0.0000	0.7910
Direct ownership	Full	3931	0.1120	0.0000	0.2263	0.0000	1.0000
	Private	3140	0.1161	0.0000	0.2452	0.0000	1.0000
	Public	791	0.0958	0.0383	0.1249	0.0000	0.7360
Contribution index		3465	0.0879	0.0000	0.3943	0.0000	3.4467
1 year (EBIT/Asset)		2870	0.0451	0.0465	0.1083	-0.3402	0.4346
1 year (OI/Asset)		2896	0.0019	0.0102	0.1345	-0.5644	0.4292
1 year (NI/Asset)		2897	-0.0117	0.0067	0.1339	-0.6290	0.3663
3 years (EBIT/Asset)		3090	0.0448	0.0485	0.0992	-0.3402	0.4346
3 years (OI/Asset)		3120	0.0036	0.0107	0.1201	-0.5644	0.4292
3 years (NI/Asset)		3121	-0.0098	0.0062	0.1162	-0.6290	0.3663
1 year SD (5 years)		2908	0.0613	0.0362	0.0787	0.0022	0.5342
3 years SD (5 years)		2940	0.0600	0.0363	0.0761	0.0022	0.5342
3 years Beta (1 year)		740	1.0697	1.0532	0.4044	-0.0345	2.2510
3 years Beta (3 years)		741	1.0346	1.0314	0.3669	-0.0345	2.2510
Leverage		3195	0.5438	0.5579	0.2283	0.0000	3.4568
Years of operation		3191	2.6804	2.7726	0.8454	0.6931	4.4067
Public company		3931	0.2012	0.0000	0.4010	0.0000	1.0000
Firm size		3391	3.0591	2.9929	2.3082	0.0000	10.0987
Financial institution		3931	0.1328	0.0000	0.3394	0.0000	1.0000
Group size		3931	8.1157	7.8283	1.6507	0.0013	10.9098
Number of affiliates		3931	3.4831	3.4012	0.5743	1.7918	4.4543
Group with financial institution		3931	0.9349	1.0000	0.2468	0.0000	1.0000

Panel B: comparison with the existing literature (using average figures)

	Voting right – cash flow right	Voting right/ cash flow right	Coverage	Period
This paper (all)	0.47	3.29	All chaebols firms	1997–2002
This paper (private)	0.54	3.49	Private chaebol firms	1997–2002
This paper (public)	0.23	2.46	Public chaebol firms	1997–2002
Claessens et al. (2000)	0.04	1.27	211 Korean public firms	1997
Chang (2003)	–	1.47	Public chaebol firms	1986–1996
Lemmon and Lins (2003)	–	2.37	188 Korean public firms	1997
Joh (2003)	0.23	–	All Korean firms	1997

calculates disparity as a ratio of voting over cash flow rights. Two observations can be made. First, the figures computed in previous studies are generally lower than those computed in this paper. For example, Claessens et al. (2000) and Joh (2003) report that the average difference

between voting and cash flow rights in Korea are only 4% and 23%, respectively.<sup>23</sup> Claessens et al. (2000), Chang (2003), and Lemmon and Lins (2003) also report that average cash flow rights leverages – voting rights over cash flow rights – in Korea are only 1.27, 1.47, and 2.37, respectively.<sup>24</sup> In contrast, our mean figures are 47% for the difference between the voting and cash flow rights, and 3.29 for the ratio of voting over cash flow rights. Second, even when comparing for a restricted sample of public chaebol firms, one can see that our figure of 2.46 is significantly greater than the figure of 1.47 computed by Chang (2003). Such a difference can be due to two factors: (i) incorporating every control chains that involve unlisted firms and (ii) using a flexible concept of control.

Thus, these findings confirm our Prediction 1 that the incorporation of private firms into the computation of disparity and the adoption of a control concept, more flexible and thus closer to reality, increase the level of disparity measure.

## 6.2. Group control motive

In Table 5 Panel A, we show the mean and median values of direct ownership for each contribution index quintiles. Notice that the extreme values of our index are winsorized. That is, as for observations outside the 1st and the 99th percentiles, the original values are replaced by the 1st and the 99th percentile values. The first column in the table shows the mean and median levels of direct ownership when the marginal contribution index is zero. In the last column, we conduct a difference-in-mean test between the 1st and the 5th quintiles.

Fig. 1 shows this in a bar chart. One can easily observe that for samples with positive contribution index, direct ownership rises at an increasing rate with marginal contribution to group control. This confirms our Hypothesis 1b that a controlling shareholder's direct ownership increases at an increasing rate with the firm's marginal contribution to group control. Later in Table 8, we reconfirm that this is true even when we control for a full set of control variables.

In Eqs. (1)–(5) of Table 5 Panel B, we show OLS, Tobit and Heckman's two-step regression results of direct ownership. In Eq. (6), we run an OLS regression for marginal contribution to group control. In Eqs. (1) and (6), we run OLS regressions using the entire sample. On the other hand, in Eq. (2), we run an OLS regression excluding observations with zero direct ownership. In Eq. (3), we run a Tobit regression. In Eq. (4), we run Heckman's first-step regression (Probit) and in Eq. (5), we run Heckman's second-step regression (OLS). In Eqs. (4) and (5), we treat zero values of direct ownership as observations not being selected.

Eq. (1) shows that the coefficient on our marginal contribution index is not only statistically significant, but also economically meaningful, thus confirming our Hypothesis 1a. The coefficient is 0.1819 and statistically significant at 1% level. A one-standard deviation increase in the index increases direct ownership by 7.2 percentage points ( $=0.3943 \times 0.1819=0.0717$ ). Eq. (2), which drops observations with zero direct ownership, also shows a similar result. Eq. (3), which estimates the Tobit model, also shows that marginal contribution to group control is an important determinant of direct ownership.

<sup>23</sup> Joh (2003), which includes private firms in the sample, reports that the average level of disparity is 23.47 percent in 1997. This figure is much lower than what we have. The difference comes from two sources: First, Joh's data includes not only chaebol-affiliated firms but non-affiliated firms as well. Second, Joh (2003) uses a database not from KFTC, but of her own construction, which can thus be incomplete.

<sup>24</sup> Chang (2003) originally computes fraction of inside ownership (equivalent to voting rights) and family portion (equivalent to cash flow rights over voting rights). Average inside ownership and family portion are 29.9 percent and 68 percent, respectively. Inverse of family portion gives the cash flow rights leverage.

Table 5  
Group control motive

Panel A: direct ownership by contribution index quintiles						
	Index=0	Q1 (-0.0035)	Q2 (0.0035–0.0151)	Q3 (0.0151–0.0498)	Q4 (0.0498–0.1578)	Q5 (0.01578–3.4467)
Direct (mean)	0.0993	0.0202	0.0588	0.0979	0.1358	0.3536
Direct (median)	0.0000	0.0000	0.0080	0.0470	0.0951	0.2751
Panel B: OLS and Heckman regressions						
	(1)	(2)	(3)	(4)	(5)	(6)
Models	OLS	OLS	Tobit	1st step Heckman probit	2nd step Heckman OLS	OLS
Dependent variables	Direct ownership	Direct ownership	Direct ownership	Observe direct ownership	Direct ownership	Contribution index
Contribution index	0.1819*** (10.95)	0.1315*** (8.63)	0.2306*** (15.15)	1.5169*** (7.71)	0.0985*** (6.39)	0.7685*** (8.65)
Direct ownership						-0.1564* (1.68)
3 years (EBIT/Assets)	0.2492*** (4.51)	0.5847*** (5.71)	0.4163*** (4.63)	0.6759* (1.68)	0.5295*** (5.94)	
3 years SD (5 years)	0.1964** (2.07)	0.1739 (1.40)	0.2649*** (2.65)	0.5558 (1.18)	0.1610* (1.84)	0.1119 (0.50)
Leverage	0.0996*** (3.03)	0.0744 (1.16)	0.2616*** (4.71)	1.2019*** (4.77)	-0.0016 (0.03)	0.1046 (1.28)
Years of operation	0.0338*** (3.77)	0.0264* (1.85)	0.0904*** (6.35)	0.4902*** (7.46)	– (1.34)	0.0255 -0.0610*** (3.77)
Public company	-0.0165* (1.76)	-0.0458*** (3.27)	0.0063 (0.35)	0.2718*** (3.15)	-0.0432** (3.15)	(2.48)

	Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Group dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations with index = 0	Include	Exclude	Include	Include	Include	Include	Include
Observations	2158	1166	2158	2158	2158	2158	2158
Censored observations							
Uncensored observations							
Adjusted $R^2$	0.2764	0.4015					
Firm size	-0.0090***	-0.0417***	0.0020	0.1607***	-0.0527***	-0.0527***	-0.0527***
	(3.46)	(9.32)	(0.41)	(6.84)	(9.19)	(1.25)	(1.25)
Financial institution	0.0004	-0.0187	0.0219	0.2412***	-0.0311*	-0.0311*	-0.0311*
	(0.04)	(1.15)	(1.11)	(2.58)	(1.74)	(0.21)	(0.21)
Group size	0.0013	0.0184	0.0039	-0.0118	0.0206	0.0131	0.0131
	(0.12)	(1.10)	(0.19)	(0.12)	(1.17)	(0.84)	(0.84)
Number of affiliates	-0.0274	-0.0286	-0.0449	0.0241	-0.0281	0.0453	0.0453
	(0.78)	(0.54)	(0.63)	(0.07)	(0.44)	(0.60)	(0.60)
Group with financial institution	0.0233	-0.0047	0.0653	0.0615	-0.0169	0.0591	0.0591
	(0.42)	(0.05)	(0.76)	(0.15)	(0.22)	(1.03)	(1.03)
Inverse Mills ratio					-0.1231***		
					(3.71)		

In Panel A, we show the mean and median values of direct ownership for each contribution index quintiles. The first column shows the mean and median levels of direct ownership when contribution index is zero. In the last column, we conduct a difference-in-mean test between the 1st and the 5th quintiles. In Eqs. (1)–(5) of Panel B, we show OLS, Tobit and Heckman's two-step regression results of direct ownership. In Eq. (6), we run an OLS regression for marginal contribution to group control. In Eqs. (1) and (6), we run OLS regressions using the entire sample. In Eq. (2), we run an OLS regression excluding observations with zero direct ownership. In Eq. (3), we run a Tobit regression. In Eq. (4), we run Heckman's first-step regression (Probit) and in Eq. (5), we run Heckman's second-step regression (OLS). In Eqs. (4) and (5), we treat zero values of direct ownership as observations not being selected. *t*-values, based on heteroskedasticity-consistent standard errors, are reported in parentheses. \*, \*\*, and \*\*\*, indicate significance at 10, 5, and 1% levels, respectively.

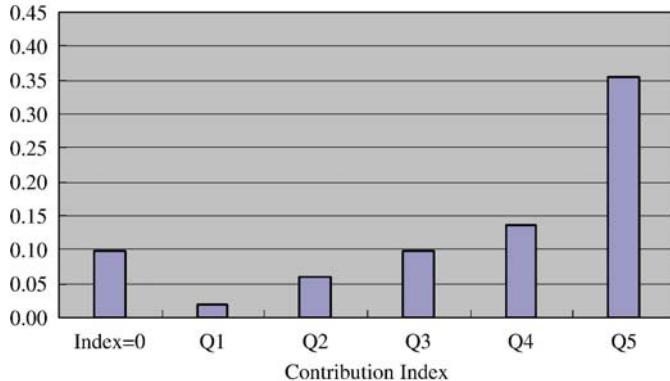


Fig. 1. Contribution index and direct ownership. The bar chart shows the mean level of direct ownership for each contribution index quintiles.

Heckman's two-step results in Eqs. (4) and (5) also show a similar result. The coefficient in Eq. (5) is 0.0985 and statistically significant at 1% level. As mentioned earlier, years-of-operation is the variable that appears in the first step equation (the selection equation), but not in the second-step equation. Also notice that the coefficient on inverse Mills ratio is statistically significant, which indicates the existence of sample selection.

Eq. (6) runs the OLS regression in reverse, where marginal contribution index is on the left-hand-side and direct ownership is on the right-hand-side. The coefficient on direct ownership is

Table 6  
Group control motive: 2SLS

	(1)	(2)	(3)	(4)
	1st stage	2nd stage	1st stage	2nd stage
	Contribution index	Direct ownership	Direct ownership	Contribution index
Direct ownership				1.2113** (2.49)
Contribution index		0.4362** (2.28)		
3 years SD (5 years)			0.2520*** (4.02)	— —
Public company	-0.0651*** (2.70)	— —		
Other controls	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Group dummies	Yes	Yes	Yes	Yes
Observations	2158	2158	2158	2158
Adjusted <i>R</i> -squared	0.0742	0.0469	0.1590	0.1604

In this table, we show the results of two-stage least squares (2SLS). Eqs. (1) and (3) respectively show the first stage regressions for contribution index and direct ownership. Eqs. (2) and (4) respectively show the second stage regressions for direct ownership and contribution index. For the remaining controls, we use the same set of variables that appear in Table 5. *t*-values, based on White's heteroskedasticity-consistent standard errors, are reported in parentheses. \*, \*\*, and \*\*\*, indicate significance at 10, 5, and 1% levels, respectively.

0.7685, which is statistically significant at 1% level and also economically meaningful. A one-standard deviation increase in direct ownership increases the index by  $0.1739 (=0.2263 \times 0.7685=0.1739)$ . This is approximately half the standard deviation of our contribution index.

The significant coefficients on direct ownership found in Eq. (6) raises the possibility that causality can be running in the opposite direction, which calls us to estimate the two-stage least squares (2SLS) model. Table 6 reports the 2SLS results. Eqs. (1) and (3) respectively show the first stage regressions for marginal contribution to group control and direct ownership. Eqs. (2) and (4) respectively show the second stage regressions for direct ownership and marginal contribution to group control. The coefficient on the marginal contribution index in Eq. (2) and the coefficient on direct ownership in Eq. (4) suggest that causality runs in both directions. The coefficient on contribution index in Eq. (2) is 0.4362 and the coefficient on direct ownership in Eq. (4) is 1.2113. Both are statistically significant at 5% level and also economically meaningful. Given the results in Eq. (2) of Table 6, a one-standard deviation increase in the contribution index increases direct ownership by 17.2 percentage points ( $=0.3943 \times 0.4362=0.1720$ ), which is huge. On the other hand, a one-standard deviation increase in direct ownership increases the index by 0.2741 ( $=0.2263 \times 1.2113=0.2741$ ), which is approximately 70% of a one-standard deviation change in our index. Overall, the 2SLS results reconfirm our Hypothesis 1a.

As a robustness check, in Table 7, we report year-by-year OLS regression results of Eq. (1) in Table 5 Panel B during the sample period of 1997–2002. The coefficients on the contribution index are always positive and significant at 1% level. An interesting observation is that the coefficient peaks in 1998 at 0.2463 and gradually decreases.<sup>25</sup>

In Table 8, we regress direct shareholding on the second, the third, or the fourth power of marginal contribution index. Even when the fourth power term is included, all four coefficients remain to be statistically significant. When we include the fifth power term, the result of which is not shown in the table, the coefficients turn insignificant. Eq. (4) shows that the significance of each coefficient survives even when we include the full set of control variables. In Eq. (5), we drop observations with zero index values, to see if it matters. There is no qualitative difference.

Fig. 2 shows the result in a bar chart. Each bar shows the mean fitted values of direct ownership computed for each index quintiles using the coefficient estimates in Eq. (4) of Table 8. The bar chart clearly shows that direct ownership increases at an increasing rate with marginal contribution index. This reconfirms our Hypothesis 1b.

As an additional robustness check, we also tried firm and industry fixed-effects models, the results of which we do not report here. When we include industry fixed-effects (4-digits) in Eq. (1) of Table 5 Panel B, the coefficient and its *t*-value on marginal contribution index drop only slightly (coefficient=0.1686, *t*-value=9.85). With firm fixed-effects, however, the coefficient on marginal contribution index does drop (coefficient=0.0534). However, it remains to be statistically significant at the 5% level (*t*-value=2.42).

### 6.3. Pecuniary motive

Table 9 reports the OLS regression results of cash flow right and profitability. Profitability is measured as EBIT over assets. Firm risk is measured by the standard deviation of EBIT/assets over a five-year period. In Eq. (1) and (3) of Table 9, we use a single-year measure, while in Eqs. (2) and (4) of Table 9, we use a three-year average. Extreme values of (EBIT/Asset) and 5-year

<sup>25</sup> A one-standard deviation increase in the index translates into a 9.71 percentage point increase in direct ownership.

Table 7

Group control motive: yearly regressions

	Direct ownership						
	1997	1998	1999	2000	2001	2002	All years
Panel B, Eq. (1)	0.2192*** (5.09)	0.2463*** (4.95)	0.2372*** (4.09)	0.1654*** (5.07)	0.1690*** (5.22)	0.1362*** (5.12)	0.1819*** (10.95)
Observations	451	397	345	315	306	344	2158
Adjusted $R^2$	0.2248	0.2436	0.2439	0.2481	0.3904	0.2907	0.2764

Eq. (1) in Table 5 Panel B is estimated for each year during the sample period.  $t$ -values, based on White's heteroskedasticity-consistent standard errors, are reported in parentheses. \*, \*\*, and \*\*\*, indicate significance at 10, 5, and 1% levels, respectively.

Table 8

Group control motive: non-linearity

	Direct ownership				
	(1)	(2)	(3)	(4)	(5)
Contribution index	0.5123*** (11.16)	0.6877*** (9.12)	0.8978*** (8.88)	1.1399*** (9.75)	1.2195*** (10.22)
Contribution index <sup>(2)</sup>	-0.1167*** (8.05)	-0.3328*** (3.76)	-0.8493*** (3.84)	-1.1586*** (4.89)	-1.2458*** (5.43)
Contribution index <sup>(3)</sup>	0.0491** (2.40)	0.3549*** (2.67)	0.4997*** (3.79)	0.5325*** (4.24)	
Contribution index <sup>(4)</sup>		-0.0505** (2.24)	-0.0724*** (3.40)	-0.0762*** (3.77)	
3 years (EBIT/Assets)			0.2618*** (4.94)	0.1502* (1.85)	
5 years SD (1 year)			0.2699*** (2.99)	0.0799 (0.84)	
Leverage			0.0814*** (2.62)	-0.0819* (1.67)	
Years of operation			0.0185** (2.17)	0.0419*** (3.69)	
Public company			-0.0179** (2.16)	-0.0341*** (3.50)	
Firm size			-0.0126*** (4.96)	-0.0068* (1.95)	
Financial institution			0.0091 (0.83)	-0.0092 (0.70)	
Group size			-0.0033 (0.31)	-0.0058 (0.50)	
Number of affiliates			0.0003 (0.01)	0.0331 (0.93)	
Group with financial institution			-0.0056 (0.10)	-0.0460 (1.09)	
Group dummies	No	No	No	Yes	Yes
Year dummies	No	No	No	Yes	Yes
Observation with index=0	Include	Include	Include	Include	Exclude
Observations	3465	3465	3465	2158	1201
Adjusted $R$ -squared	0.1239	0.1274	0.1301	0.3558	0.5153

Eq. (1) in Table 5 Panel B is estimated with the second, third, or fourth power of marginal contribution index. In Eq. (5), we drop observations with zero index values, to see it matters.  $t$ -values, based on heteroskedasticity-consistent standard errors, are reported in parentheses. \*, \*\*, and \*\*\*, indicate significance at 10, 5, and 1% levels, respectively.

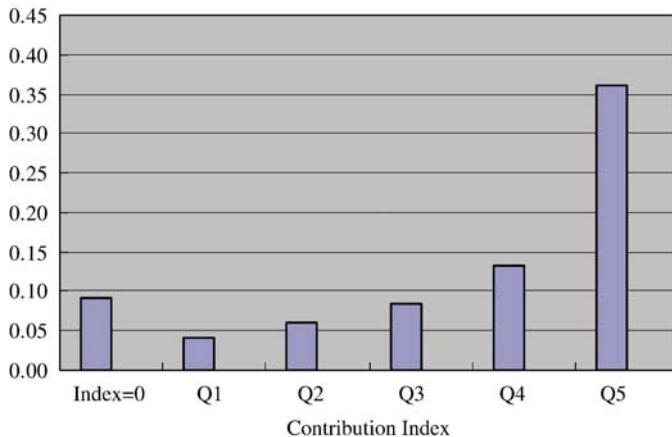


Fig. 2. Contribution Index and Fitted Values of Direct Ownership. The bar chart shows the mean fitted values of direct ownership for each contribution index quintiles using the coefficient estimates in Eq. (4) of Table 8.

standard deviation are winsorized. That is, as for observations outside the 1st and the 99th percentiles, the original values are replaced by the 1st and the 99th percentile values.

Eq. (1) in Table 9 shows that the coefficient on profitability is statistically significant at 1% level and has the expected sign, thus supporting our Hypothesis 2a. The *t*-value is 2.85. The magnitude of the coefficient, however, is not economically large. A one-standard deviation increase in profitability increases cash flow rights only by 1.4 percentage points ( $=0.1083 \times 0.1288 = 0.0139$ ).<sup>26</sup> When we use a three-year average, rather than a single-year measure of profitability, the coefficient and the *t*-value increase. As can be seen from Eq. (2), the *t*-value is now 4.29, and a one-standard deviation increase in profitability increases cash flow rights by 2.1 percentage points ( $=0.0992 \times 0.2147 = 0.0213$ ).<sup>27</sup>

However, Eqs. (1) and (2) report that the coefficients on firm risk are not statistically significant whether we use a single-year measure or a three-year average, thus rejecting our Hypothesis 2b. The magnitude is also economically small. For example, in Eq. (1), a one-standard deviation increase in a single-year measure of firm risk increases the level of cash flow rights by 1.1 percentage points ( $=0.0787 \times 0.1420 = 0.0112$ ). Also, even if we replace our accounting measure of firm risk with *beta*, the result of which we do not report here, the coefficients remain insignificant.

One possible explanation can be the *control potential argument* suggested by Demsetz and Lehn (1985), which predicts that firms with high volatility tend to have high ownership concentration, thus diluting the pecuniary effect. According to this argument, there is a certain wealth gain achievable through more effective monitoring of managerial performance by a firm's owner. This is particularly so when the market for corporate control does not exist, as is the case in Korea. When a firm operates in an uncertain environment, it becomes more costly to monitor managerial performance. Under this situation, greater ownership concentration becomes an effective substitute to market for corporate control. This *substitution effect* may have offset the *pecuniary effect*, which we originally had in mind.

<sup>26</sup> A change of profitability, from worst to best, increase cash flow rights by 9.98 percentage points.

<sup>27</sup> A change of profitability, from worst to best, increases cash flow rights by 16.64 percentage points.

Table 9  
Pecuniary motive

	Cash flow right		1 year (EBIT/Assets)	3 years (EBIT/Assets)
	(1)	(2)	(3)	(4)
1 year (EBIT/Assets)	0.1288*** (2.85)			
3 years (EBIT/Assets)		0.2147*** (4.29)		
1 year SD (5 years)	0.1420* (1.74)		0.2423*** (4.02)	
3 years SD (5 years)		0.1160 (1.43)		0.1520** (2.57)
Cash flow right			0.0399*** (2.81)	0.0506*** (4.27)
Contribution index	0.1467*** (11.23)	0.1469*** (11.37)	-0.0042 (0.85)	-0.0050 (1.23)
Voting right	0.2734*** (17.87)	0.2732*** (18.10)	-0.0261** (2.53)	-0.0267*** (2.97)
Leverage	0.0898*** (2.86)	0.0928*** (3.00)	0.0023 (0.10)	-0.0162 (0.84)
Years of operation	0.0444*** (5.28)	0.0424*** (5.10)	-0.0080 (1.61)	-0.0042 (0.95)
Public company	0.0193** (2.22)	0.0200** (2.33)	-0.0097* (1.78)	-0.0094** (2.10)
Firm size	-0.0054** (2.09)	-0.0053** (2.06)	0.0035** (2.23)	0.0046*** (3.41)
Financial institution	-0.0143 (1.40)	-0.0070 (0.70)	-0.0483*** (7.73)	-0.0492*** (9.43)
Group size	0.0121 (1.24)	0.0107 (1.03)	0.0101 (1.61)	0.0059 (1.21)
Number of affiliates	-0.0372 (1.11)	-0.0369 (1.10)	0.0015 (0.08)	-0.0050 (0.27)
Group with financial institution	0.0139 (0.33)	0.0157 (0.38)	-0.0167 (1.11)	-0.0140 (1.02)
Year dummies	Yes	Yes	Yes	Yes
Group dummies	Yes	Yes	Yes	Yes
Observations	2112	2158	2112	2158
Adjusted <i>R</i> -squared	0.4713	0.4706	0.1084	0.1163

This table shows results of OLS regressions for cash flow right and profitability (measured as EBIT over assets). In Eqs. (1) and (3), we use one-year measures of profitability and volatility, and in Eqs. (2) and (4), we use three-year averages. *t*-values, based on White's heteroskedasticity-consistent standard errors, are reported in parentheses. \*, \*\*, and \*\*\*, indicate significance at 10, 5, and 1% levels, respectively.

Most of the control variables have the expected signs. In Eq. (1) from Table 9, the coefficient on voting rights is positive and highly significant. Leverage also has a positive coefficient with 1% statistical significance. As already mentioned, one possible explanation is the substitution effect between equity issued to affiliated firms and debt. Eq. (1) also shows that years-of-operation and cash flow rights are positively correlated with 1% statistical significance. This can happen when new firms are established as subsidiaries of an existing company, and in this way, the controlling shareholder can minimize the risk of entering a new

business. The coefficient on public company dummy is also positive and statistically significant at the 1% level. The coefficient of 0.0357 suggests that the cash flow rights of public firms are higher than those of private firms by 3.57 percentage points, given the level of voting rights. On the other hand, firm size is negatively correlated with cash flow rights with 1% statistical significance. This suggests that, for large firms, the controlling shareholder controls the company through affiliated firms rather than through his or her own cash flow rights.

Group-level variables turn out to be insignificant when group and year dummies are included. However, when group and year dummies are removed, group size, number of affiliates, and the dummy variable for groups with a financial institution all have the expected sign with at least 10% statistical significance. The coefficient on financial institution dummy is however insignificant.

Eqs. (3) and (4) in Table 9 runs the OLS regression in reverse, where profitability is on the left-hand-side and cash flow right is on the right-hand-side. Eq. (3) uses a single-year measure of profitability, while Eq. (4) uses a three-year average. The coefficients on cash flow right are statistically significant, but economically not meaningful. For example, the coefficient on cash flow rights in Eq. (4) is 0.0506, which is statistically significant at 1% level. However, a one-standard deviation increase in cash flow rights increases the level of profitability by only 1.2 percentage points ( $=0.2392 \times 0.0506 = 0.0121$ ).

The small, but significant coefficients on cash flow rights found in Eqs. (3) and (4) raises the possibility that causality can be running in the opposite direction, which calls us to estimate the two-stage least squares (2SLS) model. Table 10 reports the 2SLS results. Eqs. (1) and (3) respectively show the first stage regressions for profitability and cash flow rights. Eqs. (2) and (4)

Table 10  
Pecuniary motive: 2SLS

	(1)	(2)	(3)	(4)
	1st stage	2nd stage	1st stage	2nd stage
	1 year (EBIT/Assets)	Cash flow right	Cash flow right	1 year (EBIT/Assets)
Cash flow right				0.0115 (0.33)
1 year (EBIT/Assets)		0.4193** (1.96)		
Contribution index			0.1469*** (16.11)	— —
Financial institution	-0.0491*** (8.47)	— —		
Other controls	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Group dummies	Yes	Yes	Yes	Yes
Observations	2112	2112	2112	2112
Adjusted R-squared	0.1043	0.4577	0.4688	0.1065

In this table, we show the results of two-stage least squares (2SLS). Eqs. (1) and (3) respectively show the first stage regressions for profitability and cash flow right. Eqs. (2) and (4) respectively show the second stage regressions for cash flow right and profitability. For the remaining controls, we use the same set of variables that appear in Table 9. *t*-values, based on White's heteroskedasticity-consistent standard errors, are reported in parentheses. \*, \*\*, and \*\*\*, indicate significance at 10, 5, and 1% levels, respectively.

Table 11

Pecuniary motive: alternative measures of profitability and yearly regressions

	Cash flow rights						
	1997	1998	1999	2000	2001	2002	All years
Panel A: one-year profitability and volatility							
EBIT/Asset	0.3996*** (2.88)	-0.0213 (0.19)	0.0699 (0.49)	0.2168** (2.13)	0.2496*** (2.60)	0.0748 (0.80)	0.1288*** (2.85)
SD	0.0844 (0.37)	0.2589 (1.01)	0.1756 (0.93)	0.0705 (0.31)	0.1298 (0.92)	0.1538 (0.94)	0.1425* (1.75)
Observations	433	388	337	308	302	344	2,112
Adjusted $R^2$	0.4000	0.4429	0.4680	0.4383	0.6148	0.5743	0.4713
OI/Asset	0.4043*** (3.06)	0.1053 (0.78)	0.3612*** (3.15)	0.1912* (1.75)	0.2575*** (2.69)	0.0884 (1.22)	0.2034*** (4.96)
SD	0.1021 (0.54)	0.2231 (0.96)	0.0792 (0.45)	0.1064 (0.49)	0.1243 (1.26)	0.1702 (1.35)	0.1403** (2.11)
Observations	434	393	342	311	304	344	2,128
Adjusted $R^2$	0.3984	0.4250	0.4643	0.4384	0.6176	0.5775	0.4688
NI/Asset	0.4858*** (3.00)	0.1937* (1.69)	0.3277*** (3.10)	0.1799* (1.66)	0.3144*** (3.01)	0.1014 (1.31)	0.2331*** (5.42)
SD	0.0607 (0.39)	0.2534 (1.30)	0.1155 (0.89)	0.0651 (0.35)	0.0297 (0.33)	0.0885 (0.81)	0.1090* (1.88)
Observations	435	393	342	311	304	344	2,129
Adjusted $R^2$	0.3895	0.4290	0.4603	0.4327	0.6140	0.5736	0.4653
Panel B: three-year profitability and volatility							
EBIT/Asset	0.5396*** (4.30)	0.0088 (0.07)	0.0334 (0.21)	0.2361* (1.74)	0.3499*** (3.26)	0.2437*** (2.69)	0.2147*** (4.29)
SD	0.1344 (0.61)	0.1743 (0.73)	0.1561 (0.75)	0.0667 (0.27)	0.1271 (0.93)	0.1250 (0.83)	0.1160 (1.43)
Observations	451	397	345	315	306	344	2,158
Adjusted $R^2$	0.4151	0.4414	0.4476	0.4303	0.6232	0.5823	0.4706
OI/Asset	0.3287*** (2.68)	0.0263 (0.22)	0.3839*** (2.86)	0.3255** (2.54)	0.3158*** (2.95)	0.1959** (2.53)	0.2483*** (5.51)
SD	0.2051 (1.03)	0.1303 (0.63)	0.1796 (1.17)	0.0978 (0.48)	0.0928 (1.04)	0.1372 (1.17)	0.1197* (1.86)
Observations	452	403	350	318	308	344	2,175
Adjusted $R^2$	0.3920	0.4224	0.4597	0.4396	0.6203	0.5822	0.4687
NI/Asset	0.4745*** (3.41)	0.1135 (0.82)	0.4646*** (3.22)	0.3960** (2.48)	0.4304*** (3.54)	0.2261*** (2.63)	0.3351*** (6.49)
SD	0.2209 (1.38)	0.1570 (0.81)	0.2590* (1.96)	0.1563 (0.84)	0.0828 (0.98)	0.0925 (0.85)	0.1489** (2.57)
Observations	453	403	350	318	308	344	2,176
Adjusted $R^2$	0.3896	0.4240	0.4636	0.4410	0.6235	0.5792	0.4692

OLS regressions of Table 9 Eq. (1) are estimated with three different measures of profitability (EBIT, ordinary income, and net income) for each year in the sample period. In Panel A, we use one-year measures of profitability and volatility, and in Panel B we use three-year averages. *t*-values, based on White's heteroskedasticity-consistent standard errors, are reported in parentheses. \*, \*\*, and \*\*\*, indicate significance at 10, 5, and 1% levels, respectively.

Table 12

Pecuniary motive: non-linearity

	Cash flow right	1 year (EBIT/Assets)
	(1)	(2)
1 year (EBIT/Assets)	0.1373*** (3.07)	
1 year (EBIT/Assets) squared	−0.0534 (0.24)	
Cash flow right		0.0098 (0.30)
Cash flow right squared		0.0342 (0.97)
1 year SD (5 years)	0.1479* (1.70)	0.2398*** (3.97)
Contribution index	0.1466*** (11.22)	−0.0044 (0.89)
Voting right	0.2730*** (17.69)	−0.0244** (2.32)
Leverage	0.0892*** (2.83)	0.0038 (0.17)
Years of operation	0.0442*** (5.27)	−0.0077 (1.53)
Public company	0.0193** (2.19)	−0.0094* (1.72)
Firm size	−0.0054** (2.11)	0.0035** (2.28)
Financial institution	−0.0141 (1.38)	−0.0482*** (7.70)
Group size	0.0121 (1.24)	0.0104* (1.66)
Number of affiliates	−0.0369 (1.10)	0.0022 (0.11)
Group with financial institution	0.0138 (0.33)	−0.0169 (1.12)
Group dummies	Yes	Yes
Year dummies	Yes	Yes
Observations	2112	2112
Adjusted <i>R</i> -squared	0.4710	0.1085

OLS regressions of Table 9 Panel B Eqs. (1) and (3) are estimated with the squared terms of profitability and cash flow right. *t*-values, based on White's heteroskedasticity-consistent standard errors, are reported in parentheses. \*, \*\*, and \*\*\*, indicate significance at 10, 5, and 1% levels, respectively.

respectively show the second stage regressions for cash flow rights and profitability. The coefficient on profitability in Eq. (2) and the coefficient on cash flow rights in Eq. (4) suggest that causality works from profitability to cash flow rights, and not the other way around. The coefficient on profitability in Eq. (2) is 0.4193 and statistically significant at the 5% level. However, the coefficient on cash flow rights in Eq. (4) is 0.0115 and insignificant. Thus, the 2SLS results reconfirm our Hypothesis 2a. The coefficient on profitability in Eq. (2), however, is economically moderate. A one-standard deviation increase in profitability increases cash flow rights by 4.5 percentage points ( $=0.1083 \times 0.4193 = 0.0454$ ). This result is in contrast to Chang

(2003), which fails to show that higher performance leads to higher family portion of inside ownership, which is similar to the concept of cash flow rights over voting rights in this paper.

In Table 11, we conduct a series of robustness checks by using three different measures of profitability (EBIT, ordinary income, and net income) and running the regressions year-by-year. In Panel A, we use a one-year measure of profitability and in Panel B we use a three-year average. Three observations can be made. First, in 22 out of 36 cases, the coefficients on profitability are statistically significant. Significant coefficients, however, are not restricted to 1999 and 2000, which suggests that the equity investment ceiling imposed by the KFTC was not binding even in other years. On the other hand, none of the coefficients on firm risk are statistically significant. Second, the coefficient on profitability tends to be the largest when net income is used. The last column in Panel A shows that the coefficients are 0.1288 for the EBIT/Asset measure, 0.2034 for OI/Assets, and 0.2331 for NI/Assets. Third, the coefficient on profitability tends to be greater when we use the three-year average measures. The coefficients on NI/Assets are 0.2331 when a single-year measure is used (last column in Panel A), and 0.3351 when a three-year average is used (last column in Panel B).

Eq. (1) in Table 12 shows that the controlling shareholder's cash flow rights increase with the firm's profitability in a linear way, thus confirming our Hypothesis 2c. The coefficients on the squared terms are not statistically significant.

Notice that in Tables 9–12, we do not include industry dummies in our regressions. When we do include 4-digit industry dummies, the results of which we do not report here, the coefficient on profitability and its *t*-value slightly increase (coefficient=0.1658, *t*-value=3.65). We also tried a firm fixed-effects model to verify that our result is not entirely from cross-sectional variations. The results, of which do not report here, show that our main findings are still preserved (coefficient=0.0900, *t*-value=2.10).

## 7. Conclusions

Many believe that corporate ownership structure evolves slowly over time. Most academic works also treat ownership as exogenous as if they do support such view. But, when it comes to group-affiliated firms with a common controlling shareholder, the reality of ownership structure can be different. In this paper, we provide empirical evidence that the ownership structure of a business conglomerate can be deliberately shaped by its controlling shareholder to reflect the controlling shareholder's interests. By using an exclusive data set of 46 chaebol groups on their intra-group shareholdings in Korea during 1997–2002, we find that controlling shareholders concentrate their direct ownership in firms that serve as *de facto* holding companies – those with the greatest marginal contribution to group control – and those with high profitability.

The strong group control motive by the controlling shareholder found in this paper has a number of implications. First, it suggests that the controlling shareholders of chaebol groups see individual group-affiliated firms, including financial institutions, not only as profit-making entities, but also as means to control other group-affiliated firms. Second, our finding implies that there still might be significant private gains from group control. Otherwise, the controlling shareholder would not structure ownership in a way that maximizes his group control. This is consistent with the recent finding by Dyck and Zingales (2004), which reports premiums from controlling block transactions. According to this paper, the median value of block premium in Korea is 17%, which is above the 39-country mean of 11%. Recent corporate governance scandals in Korean chaebols also show that the controlling shareholders even engage in illegal transactions to preserve their group control, which further supports our reasoning that private gains of group control can be significant.

### Appendix A. Computation of disparity: Distinctions from the existing literature

	Claessens et al. (2000)	La Porta et al. (2002)	Lins (2003)	This paper
Non-listed companies	Ownership data not available	Ownership data not available	Ownership data not available	Ownership data available for all non-listed firms under the controlling shareholder's influence
Listed companies	Ownership data available for only three-quarters of listed firms in each country by market capitalization	Ownership data available for only largest 20 firms in each country by market capitalization	Ownership data available for only half of listed firms in each country by market capitalization	Ownership data available for all listed firms under the controlling shareholder's influence
Financial institutions	Included in the sample	Dropped from the sample	Dropped from the sample	Included in the sample
Shareholders	Only block holders with equity stakes at or above a 5% threshold are considered	–	Only block holders with equity stakes at or above a 5% threshold are considered	All shareholders are considered regardless of the size of its equity stake
Distinction among individual family members	No distinction made	–	–	No distinction made
Not-for-profit organizations	Considered as shareholders	Considered as shareholders	Considered as shareholders	Considered as shareholders
Controlling Shareholder	A shareholder that ultimately owns the direct block holding; if there are multiple ultimate owners, the one with the largest control rights (defined below) is chosen	A shareholder with the largest control right among those with at least 10% control right (defined below)	A shareholder that ultimately owns the direct block holding, and is a member of the management group (managers and their families of the company concerned)	A person who, alone or with related parties, has <i>de facto</i> control of the company (also known as the <i>same person</i> in the <i>Monopoly Regulation and Fair Trade Act</i> )
Related parties	Not considered	Not considered	Companies managed by the members of the management	Spouse and relatives; not-for-profit organizations where

(continued on next page)

## Appendix A (continued)

	Claessens et al. (2000)	La Porta et al. (2002)	Lins (2003)	This paper
<i>De facto</i> controlled companies	Not considered	Not considered	Not considered	See Appendix B
Voting rights	Sum of the weakest links in the chains of voting rights	Controlling shareholder's direct and indirect voting rights in the firm; indirect voting right over the firm concerned is $x$ percent if a sequence of firms leading to this firm forms a control chain (e.g. each of which has control over the next one), and the last firm in the chain directly controls $x$ percent of the voting rights	Sum of direct block holdings ultimately held by the management group and its related parties	Sum of direct ownership held by the controlling shareholder and its related parties
Cash-flow rights	Sum of the products of the ownership stakes held by the controlling shareholder along the chains of voting rights	Sum of the products of the ownership stakes held by the management group along the chains of voting rights	Sum of the products of the ownership stakes held by the controlling shareholder along the chains of voting rights	Sum of the products of the ownership stakes held by the controlling shareholder along the chains of voting rights
Disparity formula	Cash-flow rights/voting rights	Voting rights – cash flow rights	Voting rights/cash flow rights	Voting rights – cash-flow rights

## Appendix B. The concept of related parties and de facto control

(Source: Monopoly Regulation and Fair Trade Act)

### B.1. Business conglomerates

According to the *Monopoly Regulation and Fair Trade Act*, a business conglomerate is a group of companies whose businesses are controlled *de facto* by the same person pursuant to the standards prescribed by the *Presidential Decree*.<sup>28</sup>

There can be two different types of business conglomerates:

- (a) Where the same person is a company, a business conglomerate is a group composed of the said company and one or more companies over which the same person holds *de facto* control; and
- (b) Where the same person is not a company, a business conglomerate is a group composed of two or more companies controlled *de facto* by the same person.

### B.2. The Concept of control

The *Presidential Decree* defines companies whose businesses are controlled *de facto* by the same person in the following two ways:

- (a) A company where the same person, alone or with its related parties, owns 30% of voting shares issued, and where the same person is the largest shareholder. Related parties can refer to the following:
  - 1. Spouse and relatives (if the relative has a blood relationship, the degree of kinship must be eight or less; if the relative has a blood relationship with the spouse, the degree of kinship must be four or less)
  - 2. Not-for-profit organization where the same person, alone or with its related parties, contributed 30% of its total donation. The same person must be the largest donor, or either the same person or anyone among the related parties must be the founder.
  - 3. Not-for-profit organization where the same person, directly or through his related parties, has a controlling influence over the appointment of directors or its business activities.
  - 4. Any company whose business is controlled *de facto* by the same person according to (a) and (b).
  - 5. Any agent of the same person or its related parties.
- (b) The same person is considered to have *de facto* control of the following companies even without any share ownership.
  - 1. A company whose representative director or at least half of whose directors are appointed or can be appointed by the same person via a contract with the major shareholders or by a mutual agreement.<sup>29</sup>
  - 2. A company where the same person, directly or through its related parties, has a controlling influence over its major decisions such as organizational change or new business entry, or its business decisions.

<sup>28</sup> KFTC does not officially use the term chaebol. Instead, they use the term business conglomerates.

<sup>29</sup> A representative director refers to senior executive directors including the CEO.

3. A company that participates in any of the following personnel exchanges with a company that is controlled *de facto* by the same person (includes the same person if it is a company):
  - i. A company, the director of which has a joint appointment at a company that is controlled *de facto* by the same person.
  - ii. A company, the director or the employee of which was previously employed by a company controlled *de facto* by the same person, later employed by the company concerned, and lastly returned to the same company he/she was previously employed or to another company controlled *de facto* by the same person.
  - iii. A company in which the director or employee of which was previously employed by the company concerned, later employed by the company controlled *de facto* by the same person, and lastly returned to the company concerned or to its affiliated company.
4. A company that has transactions of funds, assets, goods, services, or debt guarantees with the same person or with its related parties above a normal range; a company that can be recognized as an affiliated company of the business group controlled by the same person according to social norms (for example, using similar trademarks).

### Appendix C. Regulation on large business conglomerates in Korea

Since 1987, the Korea Fair Trade Commission (KFTC) has been categorizing, each year in April, certain large business conglomerates to be subject to a number of restrictions, which we explain in the table below. From 1987 to 2001, KFTC designated the top 30 conglomerates in terms of their total asset size. Since 2002, KFTC changed the way it designates the conglomerates. Instead of using asset size ranks, it uses asset size thresholds. That is, KFTC regulations are imposed only when the total asset size of a conglomerate is above certain asset size thresholds (e.g. 2 trillion or 5 trillion Korean won). Following is the list of regulations imposed on each of the affiliated firms comprising the large business conglomerates designated by the KFTC. Dates are effective dates, not the dates on which the relevant bills were passed.

Regulations	Description
Ban on cross-shareholdings	<p>Affiliated firms in the designated large business conglomerates cannot have cross shareholdings with other affiliated firms in the same conglomerate (cross-shareholding refers to firm A holding shares of firm B, and firm B holding shares of firm A; circular shareholding is allowed)</p> <ul style="list-style-type: none"> <li>▪ (April 1987–March 1991) Applied to all the firms in top 30 conglomerates, with the exception of financial institutions</li> <li>▪ (April 1991–March 2002) Applied to all the firms in top 30 conglomerates, including financial institutions</li> <li>▪ (April 2002–present) Applied to all the firms in conglomerates above 2 trillion won</li> </ul>
Upper ceiling on equity investment	<p>Affiliated firms in the designated large business conglomerates can make equity investments in other domestic companies in amounts only up to 25% of net assets (=assets–book equity invested by other affiliates)</p> <ul style="list-style-type: none"> <li>▪ (April 1987–March 1990) 40% upper ceiling applied to all the firms in the top 30 conglomerates</li> <li>▪ (April 1990–Dec.1994) 40% upper ceiling applied to all the firms in the top 30 conglomerates, with the exception of financial institutions</li> </ul>

## Appendix C (continued)

Regulations	Description
Upper ceiling on equity investment	<ul style="list-style-type: none"> <li>▪ (Dec. 1994–Feb. 1998) 25% upper ceiling applied to all the firms in the top 30 conglomerates, with the exception of financial institutions</li> <li>▪ (Feb. 1998–March 2001) No upper ceiling (regulation lifted to facilitate corporate restructuring)</li> <li>▪ (April 2001–Jan 2002) 25% upper ceiling applied to all the firms in top 30 conglomerates, with the exception of financial institutions (exemptions allowed on certain conditions)</li> <li>▪ (Jan. 2002–Present) Limit voting rights on shares above the 25% upper ceiling applied to all the firms in conglomerates above 5 trillion won, with the exception of financial institutions (exemptions allowed on a variety of reasons)</li> </ul>
Ban on new debt guarantees	<p>Affiliated firms in the designated large business conglomerates cannot provide any new debt guarantees to domestic affiliates</p> <ul style="list-style-type: none"> <li>▪ (April 1993–March 1996) Debt guarantee cannot be more than 200% of book equity (if above the upper ceiling should reduce it by March 1996)</li> <li>▪ (April 1997–March 1999) Debt guarantee cannot be more than 100% of book equity (if above the upper ceiling, should be reduced by March 1998)</li> <li>▪ (April 1999–present) Ban on new debt guarantees</li> </ul>
No voting rights for financial institutions on shares issued by affiliated firms	<p>Financial institutions in the designated large business conglomerates cannot exercise their voting rights on shares issued by their affiliated firms</p> <ul style="list-style-type: none"> <li>▪ (April 1993–Jan. 2002) Applied to all the financial institutions in top 30 business conglomerates</li> <li>▪ (Jan. 2002–present) Voting rights of financial institutions allowed up to 30% of shares issued by an affiliated public firm on voting items such as revision of AOI, appointment/removal of directors, and mergers (the controlling shareholder cannot directly or indirectly exercise his/her voting rights above 30%)</li> </ul>
Board approval and disclosure of related party transactions	<p>Related party transactions above 10 billion won or 10% of book equity should be approved by the board and be disclosed to the public</p> <ul style="list-style-type: none"> <li>▪ (April 2000–March 2001) Applied to all the firms in top 10 business conglomerates</li> <li>▪ (April 2001–March 2002) Applied to all the firms in top 30 business conglomerates</li> <li>▪ (April 2002–present) Applied to all the firms in business conglomerates above 2 trillion won</li> </ul>

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